Review Article

Psycholinguistics in language teaching: Current vision

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As a result of the vertiginous advance of sciences and the development of information technology, over the last three decades a multidisciplinary trend has been generated, which has allowed the integration of research designs that were previously far from fundamentality and methodology. This approach has allowed various disciplines to create possible methodological bridges between each other, thus facilitating the understanding of different phenomena. In relation to applied linguistics, language teaching has not been exempt from these changes, which has led to a progressive succession of paradigms, that have established a series of precepts that obey more to the result of the investigation, than to an arbitrary and inflexible tradition, being the innovations coming from the generative linguistic and the cognitive psycholinguistic the most outstanding ones. The psycholinguistic model of language teaching is based on a set of multidisciplinary studies, which respond to the fundamentally objective methodological requirement -from the controlled manipulation of covert behaviors and intervening variables- and to an evidence-based practice. In this article, a general review of the evolution of the language teaching landscape, the methodological problems found within it and the proposal of a psycholinguistic model as an emerging alternative to the need to create increasingly efficient programs and projects will be developed, adapted to different age groups, supported in turn by the use of information and communication technology (ICT).

Keywords: Cognitive sciences; Language teaching; Methodology; Psycholinguistics.

I. Introduction

Currently, the most requested job position within the professional field of linguistics has become the field of language teaching. The reasons and interests that have been generating this demand revolve around the economic expansion, the establishment of political links and educational opportunities -the emergence of scholarship programs, academic exchange, volunteering-, these being the spheres of humanity that have undergone significant changes, as a result of the informational globalization, and the excessive growth of information technology, based on the evolution of the mass media (information and communication technologies [ICT]) , so it is necessary to establish one or more linguistic code, shared and / or arbitrarily accepted by the participants in these scenarios (Altasan, 2016; Crystal, 2003; Fonzari, 1999).

Since its inception, the field of language teaching has undergone different transformations as a result of the innovation in its approaches, which have been happening as a result of research generated from the latest trends that have emerged during the last century (Devís and Chireac, 2014; Richards and Rodgers, 1999). From the structuralist views to the purely cognitive proposals, the experimental programs designed within these have cemented the proposals that can currently be seen in the different didactic materials, which favor the work of the specialists in their daily work. They have established, within the different curricular programs of foreign language teaching, areas and / or specific blocks, each of these accompanied by activities, based on defined strategies and objectives, according to the population to which they will be directed, regardless of their physical location. However, most of the time these do not manage to respond to the real objectives and goals of the context, because, unfortunately, these programs do not have the necessary objective support to be able to consolidate the academic learning, because within the dynamics of foreign language teaching other intervening variables are usually present, which can significantly influence the performance of the students and / or the user of the service during the development of the same.

The introduction of psycholinguistics as an alternative measure, and of generative linguistics, as a part of a fusion of useful and necessary elements to understand the existing relationships between the participating variables -both physical and covert- present during the teaching process of languages, allowed the specialists to have an increasing support in different educational programs, although they were not fully evolved for their time due to the lack of experimental evidence, that was primitive at that time (Chomsky, 1957; De Bo, 2000; Demirezen, 2004).

As a part of the innovations carried out, and the emergence of new theoretical-practical trends in applied linguistics, there have also been developed interdisciplinary efforts and integrations, allowing other disciplines from cognitive neurosciences -psycholinguistics, neurophysiology- to participate actively in the formulation and creation of new projects and teaching programs, based on new explanatory principles, aimed at clarifying not only the curricular sequence of the educational plan of a non-native language to be taught, but also the functional relationships between the different intervening mediating variables during this process and the genesis of the underlying information processing of this complex human behavior (Hong et al., 2017; Kennedy, 2006; Leow, Cerezo, and Baralt, 2015).

Next, a historical review of the process of teaching languages, the emergence of experimental models within it, the importance of psycholinguistics as an emerging discipline within this applied space of linguistics and pedagogy, will be developed. Finally, the proposal of a program based on the description, in broad strokes, of the main aspects to be taken into account for the future creation of one or more instrument that benefit the specialists involved in this professional context will be presented, supported by the use of information and communication technology (ICT) that, more than a simple innovation, have become a real necessity.

2. Historical review

To understand the historical process of language teaching, it is necessary to count on those changes that occurred during the second half of the last century, more precisely around two fundamental and crucial disciplines to promote its successful development: Linguistics and psychology. It does not exclude the important role that pedagogy had during much of this period; However, due to a question related to the research and the media impact that has resulted from the needs described at the beginning of this text, it is worth mentioning the important and almost exclusive role played by the two disciplines mentioned above, due to their demand, the use of the experimental methodology and the pertinence on the part of their specialists in the search of alternatives and increasingly efficient measures around this problem (Scliar-Cabral, 2012; Traxler and Gernsbacher, 2006).

After the emergence of generative linguistics (Chomsky, 1965; 1957; 1976; 1997) a series of changes and transformations were carried out in the main fundamental postulates of linguistics that, until then, were based on descriptive and structuralist principles, which tried to understand the language from an artificial point of view and alien to the natural and real linguistic development, corresponding with the generic principles of this, initiating therefore a new stage of changes and innovations.

In a complementary way, the evolution of psycholinguistics -which initially remained within the hard and positivistic lines of psychological behaviorism of those times- made it possible to integrate the innovations carried out in this new stage of linguistics, adding the efforts developed by the research in cognitive psychology and neuropsychology, which allowed the creation of cognitive models, very effective when trying to approach the study of covert behaviors -not necessarily linguistic-, thus revolutionizing their study and work methodology (Vila, 1993).

This allowed the first explanatory principles of verbal behavior to be developed, based on the design of different models and diagrams that allowed access to this covert behavior, albeit indirectly, circumscribing it, manipulating it and predicting it within specific contexts, employment of vital importance for the various applied disciplines related to the first ones mentioned (Berwick & Chomsky, 2015; Zwart, 1998).

The field of language teaching was substantially favored thanks to the use of the evidences found in the aforementioned branches, as well as by the sources of information coming from the different hybrid systems - cognitive neurosciences applied to teaching - and from the technological alternatives that were necessary for its integration, employment and improvement of the pilot programs and the investigations that are still carried out, with the purpose of minimizing the difficulties and potentializing the didactic resources that will be administered inside them.

3. Experimental models

Throughout the centuries, in the course of the evolution of history, a number of teaching systems have emerged, which have appeared from rudimentary and traditional proposals, progressively evolving towards ever more comprehensive models, as a consequence of progress of the human race and of the needs that accompanied it at the same time (Vg.: Labor rhythm, time, information update, stress).

With the introduction of descriptive grammar in the socio-cultural analysis of language and communication, and the multidisciplinary inclusion of linguistics within other applied disciplines of cognitive sciences, a theoretical corpus has arisen susceptible to changes, transformations and possible realizations within the plane of behavior, which have led the experts towards a better understanding of language in various spheres of human knowledge, substantially favoring the objectives of language teaching, allowing them to perfect both their research designs as of its objectives and pedagogical goals to pursue (Celce-Murcia, 2001; McLelland, 2018).

From the insertion of an experimental methodology, it is possible to obtain useful information to be able to objectively replicate and / or reject one or several language teaching programs, based on the use of the different available technologies, in order to progressively improve the methodology, leaving aside strictly curricular aspects and generating a space for the development of new formats that are increasingly real and adjustable to the context itself (Boumová, 2008; Liu and Shi, 2007). Then, some sub-sections will be developed, describing the main methodological problems encountered and the experimental emergency that results from these.

3.1. Methodological issues

One of the main problems when starting the teaching-learning process of a foreign language is the methodology to be used (Richards and Renandya, 2002). If a bibliographic review of the development of teaching methods and their pedagogical and didactic applications throughout history is carried out carefully, the constant presence of a classical, traditional structure centred on an arbitrarily imposed curriculum can be observed not experimentally demonstrable from both quantitative and qualitative studies on this subject. Understanding this fact, from a set of programmed and artificially elaborated activities -related to listening, writing, reading and repetition- and that consequently effective learning of a language can be achieved, is completely misleading (Renau, 2016).

Some teaching systems have integrated, as part of their methodology, a series of computer programs and applications (Vg.: App technologies, web platforms, etc.), which aim to facilitate and make learning possible in an appropriate manner (Ahmadi, 2018; Amer, 2014; Gangaiamaran and Pasupathi, 2017; Guaqueta & Castro-Garces, 2018; Motteram, 2013; Nushi and Eqbali, 2018; Thouësny and Bradley, 2011; Zhao, 2003). However, for the successful application of these systems, the presence of a mediating agent is necessary, given that the personal conditions of each user -intelligence, learning styles, affectivity, and personality- have become another of the elements to be addressed to achieve the purposes initially proposed.

3.2. First experimental attempts: The emergence of cognitive neuroscience as a new hybrid system

From the gigantic research carried out in the neurophysiology of language, new multidisciplinary mergers have taken place that have extended even more the limits traditionally established for different sciences responsible for the study of language (Friederici, 2011; Hartwigsen, 2015). Within these successful mergers are cognitive neurosciences. This new scenario of opportunity has allowed various disciplines, such as pedagogy and linguistics, to generate spaces for applied research as a whole, considering a staggered approach to the problem in question and / or the object of study, in this case, the language (Moghaddam & Araghi, 2013; Dündar & Ayvaz, 2016).

The integration of the studies carried out on the complexity of the cerebral cortex, as hardware of the human psychological activity and of the modular theory of the mind, that constitutes the theoretical and computational basis of the functioning of the different cognitive processes, highlights the integration. it strives to try not only to know the substrate that underlies the language, but also to generate an objectively demonstrable, reproducible and measurable methodology, with academic and applied purposes.

The first attempts to design programs based on neurophysiological evidences had their beginnings during the first decades of the 20th century (Richards and Rodgers, 1999). However, due to the lack of methodological foundation, these were put aside and resumed in the current times, thanks to the vertiginous technological advancement that has led to a better understanding of the human brain and the psychological functions involved during the learning process, for these purposes, of a non-native language.

3.3. The experimental emergency

A proposal that could generate interest and that, to a certain extent, would favor both the understanding and successful application of language teaching methods would be the introduction of cognitive-cognitive models (Chomsky, 2006; Harley, 2001). Under this proposal, the experimental paradigms would not only be limited to being purely semantic or syntactic within their practical applications: Pragmatics would also be introduced successfully, thus achieving an integrated and flexible adjustable sociolinguistic product, constituting in turn the sustenance, for excellence, of the so-called interactive-communicative methods (Nunan, 1987). Although initially emerged within the behavioral-mediational trend, these models have gone through different types of transformations throughout the second half of the twentieth century, as a result of scientific revolutions and the evolution of them towards a cognitive-symbolic paradigm (and later, sub-symbolic), which was initially harshly questioned, due to the lack of experimental evidence available to specialists at that time (Wilson & Keil, 1999).

4. Development of new programs: Use of the psycholinguistic approach

After having carried out a background check and mentioned both the limitations and the relevance of the experimental emergence -from the introduction of experimental models- within this field, it is important to point out that a modern program applied to the teaching of languages, based on psycholinguistic foundations would integrate a set of both behavioral and cognitive technologies, which are summarized at the end of the accounts in the detailed study of a series of behaviors to be controlled -dependent variables- at the time of administration should be applied to a series of core and flexible principles, depending on the characteristics of the context where they are manifested (Lee, 2012).

Likewise, other behaviors of both affective and motivational nature could also be manipulated, taking into account other aspects related to the personality and the particular interests of each subject (apprentice, user), which are the main axes that determine the continuity of these with the service offered and will depend in turn on the age group to which they will be addressed -children, adolescents, adults-, responding to their particularities and intrinsic characteristics thereof, and considering the evolutionary variable -intervening- as one of the main factors that could significantly influence the course and modifiability of the program.

Finally, the use of digital strategies is not exempt from this procedure, since after properly integrating the use of modern ICT (as is the case with applications [App], whose demand has now been exponentially increased), the results would be even more substantial and effective, providing, consequently, greater validity to the approach.

5. Conclusions

As a result of the technological explosion, which occurred during the second half of the 20th century and the beginning of the present, a series of changes took place at the level of the different disciplines especially those related to language teaching. From this multidisciplinary integration, a set of perspectives emerged over time, which have defined the current scenario, and the bases of the different programs and projects within this field of applied linguistics, due to the high demand and the need that brought globalization with it.

During its beginnings, the explanatory efforts to try to understand the human language, its nature and its practical aspects that derived in turn from the first multidisciplinary studies, turned out to be one of the most profitable and productive programs that both applied linguistics and cognitive sciences would be responsible for promoting over time - and even more, with the emergence of hybrid paradigms, as occurred with the emergence of cognitive neuroscience.

In addition, these innovations successively influenced other related fields, generating an emergence of models - under the same precepts and conditions-, trying to solve the different methodological gaps found in most

curricular programs, whose arbitrary measures were significantly different. and that still continue to be so - from an evidence-based practice.

Within the field of language teaching, methodological transformations have been constant, as a consequence of the innovations carried out within it. This is so, that classical methodologies have been giving way to others of an experimental nature, the product of the development of new proposals from cognitive psycholinguistics, which has allowed the guidelines to be used to be based, as a consequence of the generation of studies, instrumental as evolutionary, carried out to date.

Finally, it is important to point out that from a modern psycholinguistic program, which is the result of innovation and the successive integration of the different models contrasted so far, based on the collected evidence, it is possible to carry out a study, control and a careful record of the different cognitive responses and other intervening variables that may be present and significantly influence the results during the learning process of a second language, supported in turn by the regulated employment of the various didactic modalities of ICT.

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