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COGNITIVE UNDERPINNINGS OF REPETITIVE PRACTICE IN THE LEARNING OF EFL

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ABSTRACT

Classroom practice has traditionally emphasized the value and efficacy of repetition as a means to consolidate learning. It is also well known that some methods (e.g. the Audiolingual method) have relied more exclusively on this technique. Other methods (the Direct Method, the Communicative Approach) have given priority to language use or emphasized content. Thus, repetition practices have been left aside in the last decades, while 'open' and 'free/non controlled activities' have been encouraged instead. Teaching materials available have followed these trends. Research on knowledge acquisition processes may shed some light on the issue. Studies in the field of neurobiology, neurolinguistics and psycholinguistics have contributed relevant evidence to a more accurate understanding of the structure of the brain and the role of frequency and repetition to allow for incoming information into the short-term memory to pass to and consolidate in the long-term memory. This is a necessary step to reach proceduralization and automatization. As a conclusion, repetitive practice must be present in language teaching/learning. The true methodological issue regarding repetitive practice (as illustrated in the samples here analysed) should therefore be centred on the nature of repetitive activities and on how teachers and teaching materials should administer them.

Key words: Cognitive psychology, Neurolinguistics, SLA, Language teaching/learning, Practice, Repetition, Drills.

RESUMEN

Tradicionalmente, la práctica en el aula ha enfatizado el valor y la eficacia de la repetición como un medio para consolidar el aprendizaje. Es igualmente conocido que algunos métodos (como por ejemplo, el Audiolingual) han utilizado casi de forma exclusiva esta técnica. Otros métodos (el Método Directo, el Método Comunicativo, etc.) han priorizado el uso de la lengua o el contenido. Así pues, las prácticas repetitivas han sido estigmatizadas durante las últimas décadas, mientras que, por otra parte, se han fomentado las actividades 'abiertas', 'no controladas' o de 'producción libre', una tendencia que han seguido los materiales pedagógicos. La investigación sobre los procesos de adquisición del conocimiento ha aportado nuevos datos de interés para el tema. La neurolingüística y la psicolingüística han aportado datos relevantes para una comprensión más exacta de la estructura cerebral y del papel que desempeñan la frecuencia y la repetición en el proceso de consolidación de conocimientos, mediante la transferencia de nueva información desde la memoria a corto plazo a la memoria a largo plazo. Tal etapa es necesaria para alcanzar la procedimentalización y la automatización. Como conclusión, la práctica repetitiva debe estar presente en la enseñanza y aprendizaje de idiomas. Por tanto, la verdadera cuestión metodológica en cuanto a la práctica repetitiva (tal y como se muestra en los ejemplos que se analizan en este trabajo) debería centrarse en la naturaleza de las actividades repetitivas y en el modo en que estas deben ser administradas en el aula e integrarse en los materiales docentes.

Palabras clave: Psicología Cognitiva, Neurolingüística, Adquisición de segundas lenguas, Enseñanza de lenguas extranjeras, práctica, repetición, ejercicios recursivos.

1. INTRODUCTION: PRACTICE AND LEARNING

Repetitive practice is well documented in the history of language teaching and in the daily action of teachers in the classroom. Still, the history of *language learning/teaching* reveals that in some specific periods and for different theoretical or methodological reasons the role of repetitive practice has decreased in intensity and frequency. Against the predominance of *repetitive practice (drilling)* in the Audiolingual method, for example, the Communicative method encourages free and loosely controlled activities, while other methods (Direct Method, or

Conversational approaches) are in favour of *practice* with language but not so much with ‘repetitive’ practice, particularly if rehearsal is done in activities based on the repetition of the same elements and/or structures. In the last decades repetitive practice has been practically banned as ‘politically incorrect’ by scholars and ‘modern’ methods. The question is if the exclusion of repetitive practice is the right decision to take in language teaching. The complexity of the term *practice* and the ambiguity it entails may have contributed to such a situation.

Pedagogical intervention in language teaching has traditionally been decided from the perspective of linguists, pedagogues and only partially psychologists, but not neurologists. In other words, the science on the *brain* and the *cognitive processes of knowledge acquisition* has been absent. There is a need for a more comprehensive approach to the *learning/teaching* process. The cognitive component is at the basis of knowledge acquisition, and consequently of language acquisition. As Doughty (2001: 206) states, “Whereas pedagogically oriented discussions of issues abound [...] psycholinguistically motivated rationales for pedagogical recommendations are still rare”. The role of practice in language learning requires a reconsideration from the perspective of the cognitive base on which it is cemented.

2. THE NATURE OF PRACTICE

The term *practice* needs some sort of disambiguation (DeKeyser 2007b). Practice is used here with the basic meaning of ‘an act of rehearsing behaviour over and over, or engaging in an activity again and again, for the purpose of improving or mastering it’. It is therefore a strategy of learning and of acquiring experience and/or knowledge. Practice is usually performed in sessions we call *practices*. In a broader sense, within the context of L2 teaching and learning, practice may deliberately refer to declarative knowledge previously and explicitly made available to the student, in order to turn it into procedural knowledge, or to linguistic production implying rehearsal of any linguistic knowledge the student may already have acquired or will be primed to acquire. Also, the linguistic production involved in

practice may be aimed at consolidating the mastery of a specific language.

More specifically, *practice* may also be conceptualized as a particular activity, or a set of activities, with the explicit goal of repeating several times a particular linguistic form or phrase, or to build linguistic structures which adjust to a specific rule previously explained and/or learned. This kind of *practice* may be fully conscious and the goal may also be made explicit so that it attracts the attention of the learner, and s/he redirects all the resources available to achieve the target specified.

Practice is often associated to repetitive (linguistic) *production*. Krashen (1977; 1985) calls the attention on the importance of *receptive* practice as well. Receptive practice plays a significant role in language learning (Rosa and Leow 2004; DeKeyser 2007b), and its effects reach the productive linguistic skills as well.

The phrase *repetitive practice* may bring to mind the mechanical drilling distinctive of the Audiolingual method. ‘Repetitive’ primes ‘mechanical’, and any practice which is rehearsed again and again may often end up becoming automatic. The goal we precisely pursue through practice is to consolidate and proceduralize knowledge first, and reach later on automaticity, since only automaticity in language use guarantees fluency in communication. ‘Automatic’ somehow includes the feature ‘mechanical’, since when automaticity has been reached, performance depends on the triggering of specific stimuli which will provoke a chain of responses without an explicit intervention of the declarative memory. But the sheer ‘mechanical’ use of language is inefficient whenever it divorces from meaning and breaks the necessary link and association between form and meaning proper of the communicative process. Therefore, in so far as *drilling* is *meaningful*, it can be considered useful ‘repetitive practice’.

3. NEURAL COMMUNICATION

One of the most important areas of research useful for understanding language acquisition processes centres on how neurons communicate with each other and how information is generated,

transmitted and stored. Neurons communicate by means of neurotransmitters, which result from the release of chemicals that change the electric polarization of the membrane in the receptors. Positive or negative action received in the body of the cell triggers the necessary potential to propagate such an action to other cells. Our challenge is to discover how this basic change of polarity in the neural potential derives into knowledge. The complexity of neural processes while using language or performing any other cognitive function is high (for more information, see Anderson 2005). We will briefly refer here only to one central question: how we store the different kinds of knowledge (declarative and procedural).

Two types of memory widely agreed upon in cognitive psychology participate in knowledge acquisition and storing: the *short-term memory* (as formulated by Atkinson and Shffrin 1968), and the *long-term memory*. Figure 1 (Anderson 2005: 176) illustrates how the short-term memory theory works:

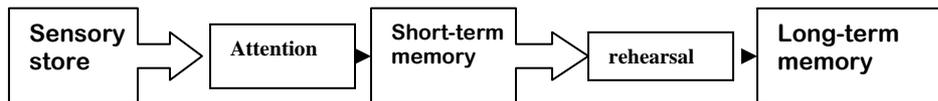


Figure 1. Knowledge acquisition and storing

The information coming from outside is first held in a transitory neural system, and is soon lost unless special attention is paid to it. The main characteristic of this transitory memory is the reduced time span during which the incoming information remains in the neural system. The necessary condition to enlarge the time span of information in memory or to consolidate its presence is *rehearsal*.

4. THE KEY ROLE OF REHEARSAL

The amount of rehearsal controls the amount of information entering the long-term memory. The shift from short-term to long-

term memory is fully dependent on and correlates to the amount of *rehearsal* of the information transmitted, especially if rehearsal is deep and meaningful (Kapur *et al.* 1994; Anderson 2005). Rundus' experimental studies (Rundus 1971) revealed that the more participants rehearsed an item, the more they remembered it. After several repetitions it is believed that structural changes take place in specific synapses (connections among neurons), which renders the task easier. When the task becomes so easy that you can perform it at any time, with less effort or attention, it is because a certain degree of proceduralization or automatization of the process has been reached ("proceduralization can be complete after the first 16-item block of practice items", as stated by DeKeyser 2007c: 98). At that point in the process structural changes in the synapses affected apparently cease. The conclusion is that there is a well established relationship between *rehearsal* and *consolidation of knowledge*. In addition, more practice implies more efficient execution.

Regarding detection and storage of information in the brain, two facts are particularly relevant here: (i) that there are two kinds of memory (Rundus 1971; Anderson 2005: 241ff), a short-term memory, and a long-term memory; (ii) that long-term memory requires rehearsal in order to consolidate the incoming information. Both facts may be synthesized in the following way: most of the information which flows through the short-term memory is usually lost, pressed by the permanent flow of incoming data, unless repetitive iteration or attention favours its selection to enter long-term memory. Iteration or *repetition*, together with attention, is therefore the habitual mechanism which guarantees permanence and avoids oblivion in information storing.

5. PRACTICE AND METHODS FOR TEACHING LANGUAGES

Practice in general and repetitive practice in particular has always been present in the learning/teaching of languages in one way or another. It must be admitted though that methods have advocated practice with different degrees of intensity and stressing specific and partial aspects. As indicated in section 2, the Audiolingual method

insisted on repetitive practice of a rather ‘mechanical’ nature (meaning subordinated to form [structures]). The Communicative method and its ‘derivatives’ emphasize language use, while the word practice and especially *repetitive practice* is seldom mentioned, as a clear reaction against the inherited and taboo-like ‘mechanical learning’, which is heavily criticized.

We should seriously question the bias and imbalance of teaching methods regarding the role of practice in the learning process. The cognitive schemes which underlie knowledge acquisition, and hence language learning, are heavily based on practice. Frequent and recursive activation of the neural connections is required for the consolidation of knowledge, and practice guarantees the iteration of the neural impulses necessary for the short-term memory to select specific items, candidates to enter the long-term memory. *The problem that may be subject to analysis and discussion is the kind of practice to be performed, not the need for practice or repetitive practice.*

The kind of practice compliant with knowledge acquisition processes cannot be dissociated from real language use, since this is precisely the goal we aim at and the input we have to proceduralize. ‘Mechanical’ practice of forms is incomplete if it is dissociated from meaning. Such a practice would perhaps end up in the learning of linguistic forms, but not necessarily in the learning of language, which requires the adequate and correct association of form and meaning, a necessary condition of communication.

Due to space limitations, three activity prototypes will be used here to illustrate our thesis. Practices from structurally based methods, as the one illustrated in Figure 2, can be considered fully ‘mechanical’ and centred on form. Attention to meaning is not necessary to succeed in this exercise:

Is there something for me?	- <i>Yes, there is.</i>
Is there something for her?	- <i>Yes, there is.</i>
Is there something for Sarah?	- <i>Yes, there is.</i>
Is there something for Peter?	- <i>Yes, there is.</i>
Is there something for them?	- <i>Yes, there is.</i>
Is there something for my sister?	- <i>Yes, there is.</i>



Figure 2. A sample of a mechanical drill

The exercise lacks real and meaningful contextualization. Speakers of a language do not engage in communicative models of this kind. The underlying neural reinforcement would prime the consolidation of linguistic forms, not communicative language.

The model in Figure 3 is more representative of communicative language. It is based on the contextualization of a linguistic function (talking about likes and dislikes), while focus on form is also emphasized:

Ask each other about things you like doing in your free time.

A- *I enjoy skiing in winter. Do you?*

- Reading*
- Dancing*
- Watching TV*
- Reading*
- Climbing mountains*
- Cycling*
- Walking in the park*

B.- *Yes, I do.*
No, I don't.

Figure 3. A sample of a meaningful drill

The structural model habitually used for fulfilling this communicative function is recurrently practised within a context which, even if pedagogically arranged, is close to what speakers do in similar circumstances. Form and meaning are reasonably taken into consideration in this practice.

Repetitive practice of linguistic forms (third person singular in the present simple tense of verbs) is also present in controlled exercises of apparently less repetitive nature and which are basically contextualized as a task, as shown in Figure 4:

Match the departments (1-9) with the correct definition (a-i):

<i>1. Design</i>	<i>a. makes products</i>
<i>2. Marketing</i>	<i>b. sells to customers</i>
<i>3. IT</i>	<i>c. buys products or services for the company.</i>
<i>4. Production</i>	<i>d. deals with the company's accounts.</i>
<i>5. Finance</i>	<i>e. hires new employees and organises training.</i>
<i>6. Buying</i>	<i>f. arranges work.</i>
<i>7. Sales</i>	<i>g. maintains the company's computer systems</i>
<i>8. Human Resources</i>	<i>h. invents and develops new products.</i>
<i>9. Research and Development</i>	<i>i. promotes products or services.</i>

Figure 4. A contextualized activity with repetitive elements

These are obviously pedagogically arranged activities that focus on specific linguistic problems. This kind of practices will favour the consolidation of the declarative knowledge underlying this structure and reinforce its proceduralization. Previous explicit presentation and explanation of the problems being practised may also help consolidation (DeKeyser, 2007b; Robinson & Ellis, 2008; van Patten, 2004b). Less controlled activities (of the kind: “Read the descriptions of the animals and say which one you like most”) do also imply practice of the language, but they are not termed ‘repetitive’ because they are not centred on specific items recursively brought into the working memory.

CONCLUSION

Starting from the cognitive schemes of knowledge acquisition, the role and nature of practice in the classroom and in the teaching materials needs to be re-evaluated. Linguistic and pedagogical theories may explain the structure of language and the organization of teaching, but they have not much to say about the biological support underlying and conditioning the neural knowledge acquisition device.

A theory of language learning must break through the traditional constraints imposed by linguists and pedagogues, or by the traditional classrooms, and pay attention to the role of all the components that intervene in the process of knowledge acquisition. Neurolinguistics, together with psycholinguistics and cognitive linguistics, reveal that *practice* in general and *repetitive practice* in particular is a key element in the learning process.

Moreover, the final goal of language learning is to gain communicative fluency in this skill. It must be emphasized that skills can only be adequately performed when they are fully proceduralized and automatized, and repetitive practice is a necessary requirement to reach this goal. The stage of declarative knowledge (explicit knowledge) is not enough for fluent language use, even though it may help towards that goal. Definitely, the amount of practice along the learning process can be slightly increased or decreased in quantity or frequency, but it seems that it should never be left aside or reduced to insignificant doses.

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