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A Strategy-based Scheme for Promoting Vocabulary Retention among Language Learners

Azadeh Nemati, Ph.D. Candidate

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Abstract

In this article, different types of 'mnemonic' learning strategies, which according to 'Depth of Processing Hypothesis', are likely to help more on learning vocabulary and recalling later, are introduced. Also two different systematic ways of reviewing, namely, Oxford's spiraling and Pimsleur's memory schedule are explained. Finally, a practical scheme is introduced for budgeting time of the classroom as well as for better retention of the vocabulary items. It is recommended that teachers be informed of those learning strategies that can enhance vocabulary retention. Furthermore, it is proposed that the last 20-minute class time be preserved for the successful implementation of the first phase of systematic reviewing because it is the period during which most of forgetting takes place. It is also stated that the first phase of the scheme is implementable during the routine school hours which could be taken as an advantageous point concerning the proposed scheme. The way students must follow the other chains in the retention process is also illustrated using three tables.

Keywords– Language Learning, Language Teaching, Mnemonic Strategies, Vocabulary Learning Strategies, Retention, Reviewing, Practice, Depth of Processing, Spiraling, Forgetting.

1- Introduction

Although students spend a number of hours in the classroom, the amount of their learning is surprisingly not satisfactory and, in fact, lower than the expectations of both teachers and students. There could be two possible explanations for this problem: either the students did not listen to their teachers attentively and thus they never learnt the taught material, or they learnt but forgetting was at work and they cannot remember what they learnt sometimes in the past. The same applies to vocabulary learning - the building blocks of language. Students spend many hours memorizing long lists of vocabulary items, but they are not always successful in using them appropriately or remembering them when needed.

Theoretically and practically speaking, vocabulary is essential for language learning. As Cobb (2002) mentions, it now seems that vocabulary acquisition begins with word learning. Most

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probably, you may have come across learners or foreigners with dictionaries in their pockets, but not with grammar books, since without grammar at least some information can be conveyed whereas without vocabulary nothing can be conveyed at all.

The present article will embody the following parts: First, significance of the study will be elaborated on, then different ways of learning vocabulary will be discussed, later mnemonic strategies will be introduced and ultimately a scheme will be suggested for effective teaching and enhancing retention.

2- Significance of the Study

Studies throughout the 1980s and 1990s showed that vocabulary skills and knowledge are the precondition for most other language abilities and, in addition, the main source of variance in the final state of such abilities (Cobb, 2002). It is now clear that vocabulary acquisition does not happen by itself to a satisfactory degree particularly as needed for first language literacy or in second language learning (ibid).

Lexical growth must therefore be provided for in language instruction. To reach this goal the best technique of presenting and teaching vocabulary should be used especially in EFL environments. Since lexical growth can be affected by instruction, and since there are different ways of teaching and learning, those exercises which deal with deeper engagement of words should be considered and used by the teachers in the classroom. Because learning of the vocabulary of a foreign language is far from initial learning or basic recognition, the aim of teaching and learning is rather long term development of vocabulary. To this aim, exercises must be congruent with the depth of processing hypothesis.

According to 'Depth of Processing Hypothesis', the more cognitive energy a person exerts when manipulating and thinking about a word, the more likely it is that they will be able to recall and use it later (Craik and Lockhart, 1972; Craik and Tulving, 1975). This hypothesis implies that it is not important how recently learners have learnt something. What is of more importance in learning is, in fact, the depth of processing; in other words, students must be taught on how to process information deeply. Such implications extend to pedagogy as well, suggesting that exercise and learning strategies which involve a deeper engagement with words should lead to higher retention compared to shallow activities. Given the above hypothesis, the present article seeks to introduce, from among different ways of learning and teaching vocabulary, those vocabulary learning strategies which involve in deep processing and will consequently lead to better retention.

Furthermore, taking into account the most suitable exercises without considering other factors that can affect learning is not of much use to the students. Teachers' awareness of other factors such as neurolinguistics, different functions of the brain, learning and forgetting, which is a part of learning play crucial roles in teaching.

On the other hand, knowing the technique and strategies which deals with deep processing and being familiar with the rate of forgetting and space practicing as well as recycling does not guarantee applying them. To this end, this article tries to shed some light on a sample class and therefore a sample plan for teachers about how to teach vocabulary systematically will be proposed.

In all, this article addresses both teachers and students, based on this premise the objectives of this study are three-fold: (1) to bring in some of the best strategies that process vocabulary deeply so that will help students minimize forgetting and thus maximize better learning and (2) to explain forgetting diagram and memory schedule for space repetition proposed by some leading researchers like Oxford and Pimsleur and finally (3) to propose a sample lesson plan for practical use as well as to explore the advantages and possible ways of incorporating reviewing in class time.

3- Different Ways of Learning Vocabulary

As mentioned by Griffiths (2004), over the years many different methods and approaches for teaching and learning of languages have come and gone out of fashion each with its own theoretical and practical bases. By the same token, teaching vocabulary has also been under serious changes. For example, in grammar translation method, vocabulary was typically taught in lists and through memorization. Although it is still used in many classrooms, nowadays this method is rejected on theoretical grounds. Vocabulary can be taught in different ways each of which with its own merits and demerits. For instance, Horst (2005), Hunt & Beglar (2005), Waring & Takaki (2003), Webb (2005) and Pigada & Schmitt (2006) discussed the issue of vocabulary acquisition and teaching through reading.

Learning vocabulary from context or 'incidental learning' as opposed to 'direct intentional learning' are two different ways of learning vocabulary. According to Nation (2001) extensive reading is useful for vocabulary growth and is called incidental learning. He carried out some experiments and put forward some evidence on why incidental vocabulary from context is small (ibid). Some of such reasons as found in the literature are as follows:

First, incidental learning requires that learners use different contexts, or as Nation (2001) put it, it is in need of 'variability', to learn vocabularies. Second, learners must encounter a word at least 6-20 times (Zahar et. al, 2001) or according to Nation (1990) 5-16 exposures is needed to learn a specific vocabulary. This means that context must be rich and informative. Third, learners must be good guessers of vocabulary; otherwise, they will not be able to conjecture the meaning. In fact, L2 learners, due to their inadequate grasp of target language skills, are less effective guessers and less incidental learners of English vocabulary (Yongqi Gu, 2003). Furthermore, guessing is difficult for beginner learners who do not have the basic knowledge and language skills.

On the other hand, vocabulary can be learnt 'intentionally' through some strategies and plans. There exist conflicting views among language professionals concerning the relative superiority of two approaches of 'contextualized' and 'de-contextualized' ways of learning. Oxford and Scarcella (1994), for example, observe that while 'de-contextualized learning' (word list) may help students memorize vocabulary for tests, students are likely to rapidly forget words memorized from lists.

According to Nielson (Internet Article 1), at early stages of language development, 'de-contextualized' vocabulary instruction has been found to be more effective in building a fundamental vocabulary than the contextualized reading. Later he suggested that teachers of beginner level learners need to include greater amount of 'de-contextualized' vocabulary instruction (word list) gradually increasing toward more context based vocabulary learning (extensive reading) as the language ability of the learners develops. Of 'de-contextualized' vocabulary memorization strategies, 'mnemonic strategies' involving deep semantic processing of target word have shown to be more effective than memorization techniques involving shallow processing such as oral rote repetition (O'Malley and Chamot, 1990; Oxford, 1990).

In what follows, and after a brief introduction to the term 'strategy' itself, 'mnemonic techniques' or memory aids will be introduced very briefly. These strategies have been taken from different sources and taxonomies such as Oxford (1990), Schmitt (1997) and Nation (2001).

Strategy is a word that comes from the ancient Greek term 'strategia' meaning 'the art of war'. Students equipped with these strategies will have a source of empowerment at their disposal to learn more and easier. According to Oxford (1990) although formally these mnemonic techniques have only recently been discovered, they have, in fact, been used for thousands of years and were used to assist storytellers commit to memory their lines.

Strategies can be classified in different ways by different researchers, Oxford (1990), for example exploited the term 'direct strategies', Schmitt (1997) employed the terms 'determination' and 'consolidation strategies', etc. No matter what the name, they are important due to the fact that they integrate new material into existing cognitive structures in addition to providing retrieval clues. Also, as mentioned earlier based on Craik and Tulving's (1975) theory of memory called the depth of processing fame work how well information or in the same vein vocabulary is remembered is not a function of how long a person is exposed to that information, but instead depends on the nature of the cognitive processes that are employed. This theory has three levels of processing that can be compared to the levels in a pyramid. If the aim of teaching vocabulary is to remember and use it after a long time they should be processed at a deep meaningful way rather than preliminary shallow process which are concerned with the other two levels of the pyramid. Those mneemonic strategies which lead to deep processing and therefore will promote long term are as follows:

I - Linguistic Mnemonics

Peg method: Link the new words to the rhyme to learn and remember better. For instance, 2 is a shoe or I hit a' parrot' with my 'carrot', or a nonsense rhyme for the following words *coat, boat, float, moat and dote.*

Key word method: After your first exposure to an unknown word, take two steps: (1) Think of a first language word, and (2) think of a visual image where the meaning of the unknown word and the meaning of the key word is combined, for example in Spanish the word *pan* 'bread' can be learnt by imagining a loaf of bread in a 'pan'.

II - Spatial Mnemonics

Loci method: To use this ancient technique, imagine a familiar location such as a room then mentally place items to be remembered there, to recall take an imaginary walk along the landmarks in the room and retrieve the items in it.

Spatial grouping: Rearrange words on a page to form different kinds of pattern such as triangle, square, columns, etc.

Finger method: Associate each item to be learnt with a finger.

III - Visual Mnemonics

Pictures: Use paired pictures with the word you need to learn. It does not have to be necessarily purely mental pictures like visualization. It is especially important for beginners and

concrete words. You can draw objects like *house* and *tree*. Of course, even abstract words like 'evil' or 'truth' can be turned into symbols on a piece of paper for the purpose of remembering. For many positions like 'above', 'under', 'among' and 'below' learners can also draw diagrams with arrows to illustrated meaning, and they do not need to be very artistic.

Visualization: Visualize a word you need to remember for example by means of picturing the place where the word is located in a page.

IV - Physical Mnemonic

Grouping: Group the words you need to remember by color, size, function, likes/dislikes, good/bad, or any other feature that makes sense to you. Put it another way, classify or reclassify language materials into meaningful units either mentally or in writing, thus reducing the number of unrelated elements. Groups can be based on type of word -- all nouns, adjectives, or pronouns -- like (*you, he, she, someone*) or on conceptual similarities (*hot, warm, fire*), topic (*words about weather*), linguistic function (*apology, request*), etc.

Associating/consolidating: Relate new vocabulary to concepts already in memory or create associations in memory. Association can be simple or complex. It also can be between two things such as bread and butter. For example a learner of English, hear the word 'billboard'. S/he may associate it with a previously learnt word like 'board', this will enable that student to understand and remember the word 'billboard' more effectively.

The narrative chain: Place new words or expressions that have been heard or read in a meaningful sentence, conversation or story. This can also be done by making acronyms. For example, a learner of English may encounter a list of words and expressions related to sewing, such as 'hook', 'eye', 'seam', 'zipper', 'button', 'snap', ... and she may create a little funny story that contains all these words to put them into a meaningful context.

Semantic mapping: Arrange the words into a diagram with the key word at the center or at the top and relate words as branches linked to the key word and to each. Such a diagram visually shows how ideas fit together and incorporates an array of other memory strategies such as grouping, using imagery and associating

Recycling: The last but not the least strategy which plays a vital role in learning, is 'practicing' or as different researchers have put it 'reviewing'. Practicing learnt items does not need any specific time or place. Learners can use any free time to practice fore example during their way to or back from school, or any other time. But the important point in practicing is systematic space of reviewing. 'Spaced' and 'massed' practices are two common types of

practicing. A very robust finding in memory research, in general, and second language vocabulary learning research, in particular, is that spaced repetition results in more secure learning than massed repetition (Nation, 2001). 'Spaced' practice which leads to better long term recall involves spreading the repetition across a long period of time. In contrast, 'massed' repetition involves spending a continuous period of time giving repeated attention to a word. Practice can be done by saying the word aloud, or silent, by writing, asking teachers, listening to authentic materials ... or all the above mentioned strategies in combination. Because of the importance of reviewing, this part will be enriched by stating some models introduced by some researchers.

- *Oxford's spiraling*: According to Oxford's (1990) classification, 'structured' reviewing is especially useful for remembering new words of the target language. It entails reviewing at different intervals, at first close together and then increasingly far apart. This structured reviewing is also called 'spiraling' because learners keep spiraling back to what has already been learnt at the time they are learning new information (Oxford 1990:42). Over learning, i.e. being so familiar with the new vocabulary in a way that it becomes natural or automatic, is the goal of this type of reviewing.

Based on 'spiraling', learners can benefit from all the deep processing strategies stated earlier in this article to learn a set of vocabularies in any language. The key point is that learners should practice the words immediately, should wait 15 minutes before practicing them again, then they must practice after an hour, after 3 hours, after 1 day, 2 days, 4 days, 1 week, 2 weeks, etc. until the vocabulary item becomes more or less automatic.

- *Pimsleur's memory schedule*: Another outstanding researcher who proposed a memory schedule to act as a guide for the size of spaces between repetitions is Pimsleur (1976). His suggestion, based on research evidence, is that space between each repetition should become larger with the initial repetitions being closer together and later repetitions much further apart. The scale is exponential so if the first interval is five seconds then the next interval should be $5^2=25$ seconds, the next $5^3=125$ seconds, and the next $5^4=625$ seconds which is about 10 minutes and per rata. Table 1 applies the calculations across 11 repetitions.

Table 1: Pimsleur's memory schedule.

| Repetition | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|------------|---|---|---|---|---|---|---|---|---|----|----|
| | | | | | | | | | | | |

| | | | | | | | | | | | |
|------------------------------------------------|--------|---------|--------|---------|--------|---------|-------|--------|---------|----------|---------|
| Time spacing before the next repetition | 5 secs | 25 secs | 2 mins | 10 mins | 1 hour | 5 hours | 1 day | 5 days | 25 days | 4 months | 2 years |
|------------------------------------------------|--------|---------|--------|---------|--------|---------|-------|--------|---------|----------|---------|

4- Suggested Scheme for Effective Teaching and Enhancing Retention

Students spend thousands of hours in the classroom, but the result of their effort is not as expected. Indeed, both popular press and academic literature are replete with examples of educational failures among students and recent graduates (Rohrer, Pashler 2007). For example, a recent survey of young adults in the U.S. revealed that most could not correctly select the continent in which Sudan is located (National Geographic, 2006). This can be justified from two different angles: (1) *Students have never learnt the information in the first place which seems not to be true*, or (2) *students have already forgotten what they learnt before*. The same problem applies to learning vocabularies of another language. Students are apt to forget much of the vocabularies they learn. They are always complaining that language is often subject to forgetting. To tackle this problem, and by considering all other factors this part is going to show the practical aspect of teaching vocabulary systematically in a sample classroom. Here, the writer tries to show that although the perception of some teachers or students is that teaching English and especially focusing on vocabulary in class is a daunting aspect, by this model it is simple and practical. The whole framework is ripe for application to other languages and classes with different participants too.

4-1 Experience

Now, let's step into the classroom and see a model in which the systematic way of teaching vocabulary is practiced. The teacher enters into the classroom in one of the Universities in Iran, which is not a prestigious University. The young teacher stands on the platform and after greeting warmly, introduces herself. Gradually students change their seats and try to listen. The class is crowded, there are about 40 freshmen students of both gender from different fields of study. It is their general English class. Although, the class is heterogeneous, broadly speaking based on their English score on the entrance exam they have low command in English. Some more students enter the class later so the teacher interrupts to greet the latecomers and then explains the laws of University. Nearly most of them enter the University recently and their mean of age is 23. This is their second semester and they have just passed Basic English which

revolves around grammar last semester. General English mostly works on reading comprehension and vocabulary.

She continues the class by asking some general questions about the students' views on English and the methods that apply to learn vocabulary items. Iran is an example of an EFL environment and as a result English is not considered as the medium of instruction nor communication, it is treated just as a subject.

After this general introductory she pursues a line of questioning that attempts to get students to relate the problem of vocabulary learning to their own experience so she asks, "have you ever studied a lot of vocabulary items but when you are supposed to use it or remember the meaning you could not?" nearly most of the students nod which shows that they faced this problem frequently. Some of the students continue that they are not happy with the English courses at all, or they hate English class and since English is a part of curriculum and they have to pass they attend the class.

Although the teacher is young she has a lot of experience, and is fond of her job, so she continues that this semester their English class is different from what they had before and she assures the students that they will sense it. Then, she continues her presentation with some general sentences about the nature of vocabulary different ways of learning as well as different strategies and mnemonic technique. The class seems much more interested because it is the first time that they hear such terms and their definitions in simple terms. After giving this preliminary explanation the teacher introduces one of the mnemonic techniques in detail (it is suppose that each session the students learn some of those aforementioned techniques). Some more in-class exercises are given to the students to be sure that they understand perfectly and the same procedure should be followed for the vocabularies of the first unit of their book at home.

In this first session, the teacher gives some more information about forgetting and its causes simply for 5 to 10 minutes because they are interrelated more information will be given throughout the term.

Later, within the next half of the time introducing one form of recycling or reviewing that can affect the whole part of learning and was discussed earlier (Oxford's spiraling or Pimsleur's memory schedule) should be dealt with. The teacher then continues that after using those

strategies and techniques the students should have 'spaced practice' after 1 day, 1 week, 2 weeks, one month and....

The last step for this session is working with flashcards and the way that they can use it in the best after having received enough information about systematic reviewing, students will have at their disposal a good instrument for better retention of the learnt materials. The teacher reiterates that producing worksheets embodying time spacing between repetitions based on Table 1 or Figure 2 will be of great help to the students. A simple and general reviewing worksheet as in Tables 2, 2-1 and 2-2 below, with only four '5-hourly', 'daily', 'weekly' and 'monthly' columns, will be introduced together simply with the way it functions in the retention process.

Table 2: A simplified version of a reviewing worksheet.

| 5-HOURLY | DAILY | WEEKLY | MONTHLY |
|------------------|------------------|---------------|----------------|
| Zeal | <i>zeal</i> | | |
| Provoke | <i>provoke</i> | | |
| Helmet | <i>helmet</i> | | |
| Prophecy | <i>prophecy</i> | | |
| Negotiate | <i>negotiate</i> | | |

Then the teacher goes that the general principle is that words learnt must be moved from each column in the left to the adjacent column that comes to its right, i.e. from '5-hourly' to 'daily' or from 'daily' to 'weekly'. If, at any stage, you cannot remember the meaning of the vocabulary item, it must be moved to a preceding column, i.e. from 'daily' to '5-hourly'. She adds that for better understanding suppose that one of you can remember the meaning of all the five vocabulary items at the 5-hourly stage. So, s/he must move the five words into the daily column (the words have been italicized to show the movement from the 5-hourly column into the daily column.). After one day s/he checks if s/he still knows those words. Then, she exemplifies that one knows words *zeal*, *helmet* and *negotiate* but cannot remember the meaning of *provoke* and *prophecy*. So, s/he can move *zeal*, *helmet* and *negotiate* into the weekly column but *provoke* and

prophecy must be moved to a preceding column (from daily to 5-hourly) where s/he has to restart the cycle (Table 2-1).

Table 2-1: The result of reviewing in the daily phase.

| 5-HOURLY | DAILY | WEEKLY | MONTHLY |
|----------|-------|-----------|---------|
| | | zeal | |
| provoke | | | |
| | | helmet | |
| prophecy | | | |
| | | negotiate | |

Table 2-2: The result of reviewing in the weekly phase.

| 5-HOURLY | DAILY | WEEKLY | MONTHLY |
|----------|--------|--------|-----------|
| | | | zeal |
| provoke | | | |
| | helmet | | |
| prophecy | | | |
| | | | negotiate |

After one week if one can only remember *zeal* and *negotiate* they can be moved into the monthly column but *helmet* must move backward from the weekly column into the daily column as shown in Table 2-2. This process continues until all vocabulary items have been moved into the monthly column. Note that for simplicity of discussions we did not discuss those words that moved one column backward. The procedure is the same. They must be checked according to the time interval specified for each column. If they have been learnt they can be moved one column to the right until they reach the last right-side column. The same procedure applies to new words learnt. Any new word must be practiced within twenty minutes from the first exposure (within class chain) and then it must be written in the first column that comes to the left which is the 5-

hourly column in our simplified scheme. The teacher point out that this is just a simplified worksheet and more columns could be added to the left and right as specified in Table 1 or Figure 2 or based on a pattern extracted from them.

Finally, in the last minutes of the time allotted to this section, the teacher summarizes and reviews the whole lessons. Now, the students seem a little bit tired but happy, their initial ideas about English and vocabulary has changed a lot, this first session was fruitful for them although still to be continued and it was just some starting points.

4-2 Thinking about the Experience

In that class, the teacher starts the lesson by posing some questions. Those general questions can act as awareness-raising for the students. This leads them to think about their past methods and what they are suppose to learn in future. Furthermore, the teacher wants cooperation and involvement of the classroom and by posing some question this opportunity is provided for all the students.

Also, the teacher tries to model and introduce some techniques. Normally all teachers tell their students to study but they will not tell them how to study. The teachers' job is not only to teach language, but to teach learning (Larsen- Freeman, 2000).

Furthermore, the teacher gives some in and out class exercises and asks the students to try out the taught mnemonic techniques and for the first unit of their course books. Because as mentioned by Larsen-Freeman (2000), an important part of learning a strategy/technique is being able to transfer it, i.e. use it in a different situation.

At the end of the class the teacher again reviews taught vocabulary items and summarize what have been covered. The reason that the teacher stresses the importance of reviewing and explaining forgetting is that there is some evidence that most forgetting occurs immediately after initial learning and then as the time passes the rate of forgetting becomes slower (Ebbinghaus, 1884; Pimsleur, 1967). In an experiment by Anderson and Tordan as cited in Nation (2001) the percentage of material retained after initial learning, one week, three weeks and eight weeks were 66%, 48%, 39% and 37% respectively. This indicates that *repetition of new items should occur very soon after learning*. Ebbinghaus was one of the first to carry out an objective study of the rate of forgetting, his experiment was based on remembering some sets of nonsense syllables. The following diagram by Ebbinghaus (1884) clears this point more:

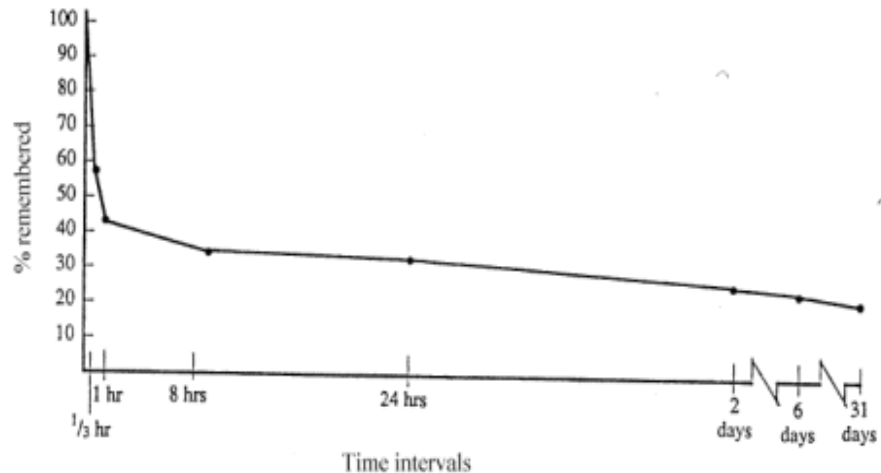


Figure 2: The rate at which items are forgotten (Ebbinghaus, 1884).

As the above figure shows most of forgetting occurs within 20 minutes after learners have first learnt something. More is forgotten within one hour and still more within 8 hours, but after 8 hours the rate of forgetting is surprisingly steady. Ebbinghaus' finding is a good justification for structural and systematic reviewing right after learning has taken place. In the rest of this part and based on what already stated, a sample practical scheme will be illustrated to help teachers at different levels take advantage of the scheme proposed here.

There are two stages in learning which are (1) *employing the most appropriate strategies that provide deep processing of knowledge*, and (2) *applying systematic reviewing*. In each stage a number of factors and prerequisites are at work which must be considered for successful implementation of the scheme. Generally, from the above two stages the first one is done by the teacher but the second one which plays a crucial role is neglected.

5- To Sum Up

In this article the main point of dissections were students and teachers but in the system of learning there is another element which was not considered here, and that is the educational system. It is most simple and realistic to view the whole system in the form of a triangle with 'educational system' on top and 'teacher' and 'student' on the other two angles as depicted in Figure 3. In what follows the responsibilities of each angle will be stated regarding either of the two stages of learning (1 & 2 above).

In the first stage, the ultimate objective is to employ the most appropriate strategies that provide deep processing of knowledge. Here, the educational system, as the most important angle in the education triangle, can play a decisive role. This role could be fulfilled by incorporating items related to teaching of strategies in the syllabus.

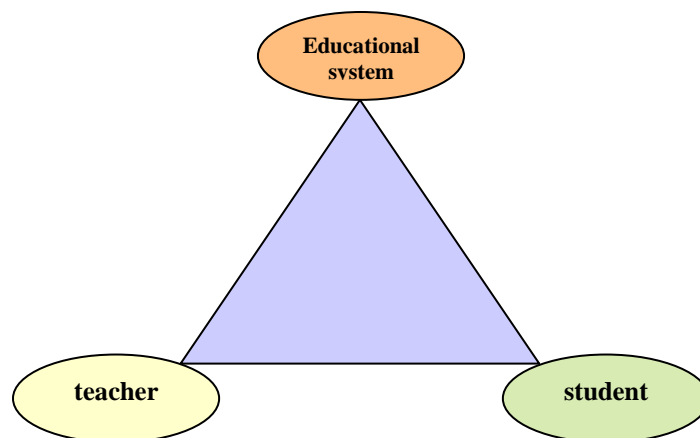


Figure 3: Three major components required for successful implementation of the scheme.

Another role that the educational system can play is to ensure that those courses exerting a higher load on memory be held early in the morning when students are more energetic. One third point is that those courses similar in content could be held adjacent to each other. This will be of significant importance since there may often be overlaps between such courses, which will make it easier for students to follow the lesson. Moreover, the teachings in the previous class will

function as a kind of reviewing for the second one. Since quite often each course is held once or twice weekly, there will be plenty of time in between and this is one sort of problem that highlights the positive role that the other two angles in the learning triangle could play.

Teachers form an important chain in the scheme and have key responsibilities. Firstly, they must be well informed about the nature and role of strategies in learning. They must raise awareness amongst students regarding learning strategies. Devoting some minutes in each session will be quite helpful. They must clarify the way students can make the best use of these strategies through exemplification, monitoring and testing. Students must also play their role by implementing the strategies taught.

The second phase of the learning process deals with systematic reviewing. Here, again all the three angles must play their roles. The educational system can support this phase through adopting appropriate policies which will guarantee the appearance of systematic reviewing in the syllabus. Teachers must devote the last twenty minutes of each session to systematic reviewing since this is the period during which most of forgetting happens. Note that this will comprise only the first chain in the whole reviewing process and the rest must be fulfilled by students themselves at home or out of class. As shown in Figure 2 above if reviewing is started about 8 hours after the first exposure to the teaching material, about fifty percent of the whole information is gone which justifies the necessity of starting the reviewing right after the teaching happens (Note that the numbers and percentages given regarding the rate of forgetting and space intervals between reviews by different people are not the same, as you may have already noticed, but what brings all those ideas together is the fact that all reiterate the role of immediate reviewing and systematic time intervals between reviewing chains.).

Students attend schools for only few hours each day and university students often have more leisure. Adding weekends, the holidays which come between semesters, or even summer holiday, which lasts more than two months, i.e. in Iran, we will be even more sensitive to the significance of out of school reviewing.

Through the discussions in this article, it was revealed that difficulties students face regarding vocabulary learning are mostly rooted in the lack of systematic practicing, which must first be dealt with in the educational system and later in the classroom. It was suggested that *teachers and instructors play their role through embedding these strategies in their teachings*. It was also found out that most forgetting happens immediately and right after learning in the classroom. So, teachers should provide opportunities for students to have time to do the first part of structured reviewing in the class after teaching is completed by the teacher. This is the most important part

in the process of learning and teaching. This means that teachers should divide each session into two parts, *teaching* and *reviewing* (preferably the last 20 minutes of the class time). This is what teacher can do for students. Furthermore, learners themselves must continue repetition after learning and complete the later phases and chains in the reviewing process as depicted in Tables 2, 2-1 & 2-2. Nowadays, there are some schools which keep students for some time after the classes are finished. The students are asked to do their homework and practice what they have learnt. This is a fortunate event although such a service is not provided in many schools. The first chain of the scheme offered in this article is, of course, implementable by all schools and within the routine school time because it asks for the inclusion of practice at the end of each class time.

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Azadeh Nemati, Ph.D. Candidate
Department of Studies in Linguistics,
University of Mysore, India and
Faculty of Jahrom Azad University, Iran.
azadehnemtiar@yahoo.com