METACOGNITION TO STUDY BETTER, WHY NOT?

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Have you ever studied really hard, felt prepared to take a test at school or college, and, when the result came out, you were disappointed? Many students face this problem daily. What might be reason for it? Is it possible to study better, that is, to do it more efficiently?

Although this is a complex question, involving several factors, I would like to propose a discussion about some components of a possible 'utopian formula' that may be hindering your performance.

Why do I refer to this term: "utopian formula"? Many factors can be associated with good learning, however, there are some beliefs which, although not effective, continue to influence individuals, preventing them from thriving academically.

What beliefs would these be? According to Chew (2014), two of these convictions are that knowledge is considered to be formed by isolated points and that learning is a quick process. Therefore, many still believe or deceive themselves by trying to believe that a few hours of study before the test is all it takes to be prepared. All these statements would encompass some elements of the utopian formula. Yes, utopian, simply because there is no quick and infallible method of learning. People seem to agree with these ideas, but in practice, why do they insist on studying inefficiently?

With regard to the learning of Science and, above all, Chemistry, students routinely cram for their exams. This results in highly fragile learning, focused on memorization of concepts, formulas and mechanisms to solve an exercise, revealing an algorithmic study, in which the concepts do not acquire either meaning or connection. Therefore, two questions are involved in this context, the short time spent studying and the disconnected way of studying.

Although memorization constitutes an important cognitive process in the acquisition of knowledge, the issue raised is the exclusive focus on memorization, leaving behind the understanding of scientific concepts and their meanings. How can this be balanced? More precisely, how should one study? How can Science and Chemistry topics be understood? This editorial intends to provide a reflection on this topic, not some kind of unreal one-size-fits-all answer. However, can metacognition help us find some possible paths?

Do you know what metacognition is? Do you use metacognitive strategies to learn or teach? Would it be interesting to do so?

Metacognition is basically "thinking about your thoughts," something that goes beyond cognition. Furthering the concept, one can bring some metacognitive aspects pointed out by Flavell (1976), such as self-regulation as well as the active monitoring of cognitive processes. But what does this have to do with learning Chemistry better?

All the time in the classroom, we learn new concepts. But how does this learning take place? It is highly important to *think actively* so that connections are feasible, because, according to Ausubel (2000), meaningful learning will involve the acquisition of new concepts that are relevant to the student, as he or she will anchor such new concepts to the pre-existing ones in his or her cognitive structure.

In other words, simply understanding what is being taught in isolation is not enough. There must be an interaction with what the learner already knows, in an intense process of learning. What do I know about what is being taught? Does it make any sense? Where do I apply this knowledge? What is this for? Do I agree with it? Why? This reflexive process is the metacognitive aspect of monitoring (Flavell, 1976), in which students can perceive what is not going well in their study, promoting significant learning. At this moment, there is the possibility of self-regulation, that is, one can redirect learning, with the reconstruction of some spontaneous concepts, towards more scientific and, especially, meaningful concepts for him or herself. All this is not limited to the classroom environment; instead, it is suggested that the student should have the autonomy to always study this way, leading him or herself to learn how to learn.

Are students used to acting this way, though? For this to be possible, teachers need to lead their classes in such direction, with the intentional use of metacognitive strategies. Metacognitive skills can be structured in a long-term process, starting from the initial grades of study. I believe that metacognition has a transversal role in the teaching-learning process, which passes through all components and unites them all at the same time. These skills can aid the subject to become more reflexive, more metacognitive - able to monitor and self-regulate his or her learning - albeit partially and, whenever possible, with the fundamental mediation of the teacher throughout the process.

So, back to the initial question: is it possible to study better? Yes, but, maybe you will need to change the way you have been studying. The first important step, which is also an important aspect of metacognition: be aware of your own knowledge (Girash, 2014), recognize what you know as well as what you do not know. Another aspect is to perceive that *learning* a new concept takes time for you to make the necessary connections in your cognitive structure. These connections are idiosyncratic to the individual. Seek to reflect and think metacognitively, aiming at monitoring and regulating yourself alone, with the help of classmates or the teacher. Learning is a process and therefore takes time to happen properly and meaningfully. However, it is a wonderful experience.

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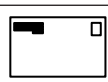

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