Learning Strategies for Medical Students

Luis B Mata Guevara[1]*, Eudo O Montiel[2] and Edy Urdaneta[3]

[1]Universidad Nacional Rafael María Baralt, Venezuela

[2]Universidad Pedagógica Experimental Libertador, Venezuela

[3]Universidad Dr. Rafael Belloso Chacín, Venezuela

*Corresponding Author: Luis B Mata Guevara, Universidad Nacional Rafael María Baralt, Venezuela.

Abstract

In this research its proposal was to find out learning strategies for medical students by a model based on metacognitive way of thinking. The way to procedure was a qualitative under the Martinez [1] idea about ethnographic research. Among the theoretical framework underlying this work are Introduction, Learning strategies, Metacognition, Meta attention, Meta memory, Metacognitive Model and Recommendations. Ideas from Valles [2] about metacognitive aspect and troubleshooting of Flavell [3] and processes the meaningful learning incidents from Mata [4]. The conclusions that the metacognitive model is structured by the following aspects: the position of the teacher, teacher-student interaction, achievement motivation and learning strategies and techniques. In each of the aspects we consider the relevance of the study in the implementation of strategies to achieve objectives inn chemistry subject and enhance meaningful learning of students in the medical field and become successful professionals.

Keywords: *Learning Strategies; Medical Students*

Introduction

Within the framework of University Education, it is interesting to reflect on the learning and academic performance achieved by students, which is closely related to the strategies that he uses himself to carry out his learning process, without having been previously instructed with cognitive and emotional strategies, which, without a doubt, aspects that are required above all by students of medicine and related sciences. In this sense, it is necessary that there is a mediation of reflection of the actors of the educational fact, in relation to whether the students of a classroom really know their attitudes and cognitive potentialities and thus optimize them in function of effective learning. Because students are currently immersed in a postmodern global world, where they must provide tools and means to be autonomous and good learners throughout their lives.

First: In that order of ideas, inserted in a society that is constantly changing and with the economic situations in which one lives, the transmission of knowledge is no longer enough. What is needed is to teach students how to "learn to learn".

Second: Thus understanding, from that perspective, learning as a process of change that is generated in the people who learn because of lived experience, a fact so primordial that it requires especially the students of the career of medicine and related sciences, because their knowledge of the chemical scientific discipline must be significant and practical to apply it and thus give timely answers to certain situations regarding medical sciences. Historically, the conception of learning as a research process arises from the behaviorist theory, that is, it is not new, but those raised in this reflection have acquired a remarkable development, especially from the constructivist positions, where it is proposed that, in significant learning, conceptual changes are accompanied by simultaneous changes in the axiological, methodological and ontological fields [5].

Third: The above is very interesting for this study since the learning of chemistry for medical students is somewhat complex and unattractive; this being one of those that has the keys to human progress since it provides the necessary well-being to have a better quality of life. However, due to this degree of abstraction of the contents of chemistry, coupled with the disinterest on the part of students who consider it difficult to understand, one of the problems is the lack of motivation that allows channeling strategies for the achievement of meaningful learning and not submit to strictly rote learning as it poses. Fourth: However, the contextualization of chemistry contents to the field of health science guides the student to establish cognitive bridges of what he knows with other new concepts related to the area of health.

An important case of applicability is the issue of Chemical equilibrium in the study of concentration of systems of biological interest such as the process that manifests respiration in the exchange of oxygen, the ions present in the chemical structure of hemoglobin among other aspects of interest to the student. That is why, the present study is aimed at generating a metacognitive model based on learning strategies, based on the postulates of Mayer [6] and works carried out by Mata [7] in such a way, that they can be used by students, when addressing any content of chemistry applied to health science in the subjects of Fundamental Chemistry, Analytical, Organic and Biochemistry.

The research was organized under a qualitative methodological architecture, based on the ethnographic tradition, characterized by the application of a design under the theory of Martínez [1] that is based on the conviction that the traditions, roles, values, and norms of the environment in which one lives, are gradually internalized, emerging characteristics that can explain individual and group behavior in an appropriate way.

Learning strategies

They are the control mechanisms that the individual has to direct his way of processing information, which promote the acquisition, storage and retrieval of information, Gargallo [7], Weinstein [8] and Mayer [6] cited by González and Flores [9], define strategies to learn how the actions and thoughts of students that occur during learning and that have a great influence on the degree of motivation and include aspects such as acquisition, retention and transfer [9]. The above is consistent with the studies proposed by Mata [7], affirms that the teaching interaction-student allows a positive identification to achieve the objectives of the chair. For it generates a reinforcement of the motivation to achieve, in terms of the improvement of the self, the cognitive impulse and a true filial impulse.

The student is committed to seeking strategies, methods and techniques that allow him to meaningfully learn the concepts and principles of the subject. Most importantly that this learning allows you to exchange ideas with your peers and teachers, without fear of differing in some cases from their ideas. Mata [4] that meaningful learning will be the tool that will lead you to the achievement of better futures. One of the fundamental ideas that each individuality must apply, to establish its particular learning strategy, is to feel good about itself. Well, the way you feel will influence your performance. As this learning is accompanied by axiological fields, then, self-esteem plays a preponderant role in establishing good interpersonal relationships and thus generating a climate of trust and well-being.

In addition, they are easy to admit positive changes and reject acts that may hurt their peers. On the other hand, the individual with high self-esteem sets professional goals with great content of efficiency, effectiveness, and taste of self-realization. Hence, the individual with high self-esteem plans their learning strategies within the context of meaningful learning. A few recommendations are currently being disseminated to achieve success in the studies; one of them refers to Superspeed learning or accelerated learning, specifically called "Suggestive Accelerated Learning Technique" (TAAS) [10]. The TAAS is a method generally used by advertisers and other entities interested in presenting some material, encouraging the audience and/or any public to own it; but which is also appropriate for accelerating the learning process in an academic campus, based on some suggestive elements.

Its main aspect consists of the combination of physical relaxation exercises, mental concentration, and suggestive elements to strengthen the ego of individuality and increase its memory, within a relaxing musical environment, and at the same time the material that must be learned is presented [11,12]. Recommendations for individual self-learning; the following recommendations are intended to serve as a guide to the reader to start in the process of accelerated learning, within the conception of meaningful learning. 1st - You must engrave the material you want to incorporate into your cognitive structure. The material is organized in fragments of four (4) seconds; when recording repeat each fragment three times, dosing the intonation: first with its normal tone, then gently (just as it speaks in someone else's ear); finally, with authority.

Repeat the cycle for each fragment. Also, measure the step of your reading: Speak four seconds, shut up four seconds, and so on. Perform eighteen- to twenty-minute exercises. 2nd - Put a musical background: Use baroque music. First a slow tune, for twenty minutes; then a quick one for three minutes. 3rd - Start your study session with relaxation exercises; in such a way that it can reach alpha levels. It is recommended to think about positive and pleasant things, previously experienced by you. The first time read silently along with the recorded tape. Try to hold your breath when something is said and expire and breathe in during breaks. If this distracts you, breathe rhythmically. At the conclusion, close your eyes and relax again. Put the same lesson back and accompany it with baroque music.

At first, do short sessions. The process tends to become the effect of a snowball. Relaxation: It is important to achieve the ability to relax the body which will allow a better rapport with the study material and its learning. The difference between a tense body and a relaxed body is first established. To that end, the person concerned shall relax it takes in air and tightens the body to retain air; then exhale the air and de-tension your body, feeling the relaxation gently. The action is repeated three times; blood flow will be experienced. Again, air is taken making tension in the face with grimaces; the tension of the body resembles that of the string of a guitar, the circulation of air through the organism and the energy it possesses is perceived; loosens the tension, exhaling the air and stays lying down or sitting, comfortably, with eyes closed, feet apart and arms along the body with the palms of the hands open towards the ceiling; it moves its head and is left in the most comfortable position.

Hair and brain resting; the whole body relaxed. A final review is made, to see if there is any non-relaxed part; if found, air is sent to relax her. Already the body is totally relaxed, thought and ideas are allowed to flow, without stopping at anyone; that is, without trying to think. Now you are traveling serenely, rested, with all the senses, with a harmonious energy that fills the individuality with an immense tranquility. The importance of these exercises lies in the ability to relax, as this determines an ideal condition for the learning process; for the mind functions with better amplitude, considering the material to be incorporated into the cognitive structure. To achieve a meaningful learning of the concepts, principles, facts, and circumstances that interest the individual, it is necessary that the conditions of environment and comfort are given that allow him to be completely relaxed, free of stress, with loose clothes and without noise.

Hence the importance of relaxation exercises, which decrease the heart rate and increase the temperature of the body, getting to enjoy a feeling of peace, tranquility, silence that warms, comfortable, peaceful, and harmonious. Pozo J [13] recommendations to optimize learning It is healthy for personal dynamics to keep in mind that high self-esteem must always be re-advanced. Therefore, it is advisable to maintain principles of conduct that achieve this objective. To continuation ten principles are listed that everyone must handle to optimize their intellectual management; they are: 1st. I am a creative person. 2nd. My management has its purpose. 3rd. I admit that my first achievement may not be perfect. 4th. I must analyze and evaluate my actions so as not to repeat mistakes. 5th. I must maintain interest, enthusiasm, dedication and persevere in my actions. 6th. I use my best in all my actions. 7th. I consider the situation according to the current variables. 8th. I must be bold. 9th. Each action leaves a learning. 10th. I am a sociable being. 1st. I am a creative person: Action and thought are the fundamental pillars to achieve success and be creative. Work accordingly no tea desserts and inactive, for you die intellectually. You are a capable person, and you will be able to achieve your goals with work, dedication; you are a creative being. 2nd. My management has one purpose: Act with goals precise, without delay. You must work, think, and create for your own enjoyment. Your goals should be

the incentive, incentive that motivates you for creation and success. 3rd. I admit that my first management may not be successful: Usually the novitiate is paid; that is, it is rare for the first performance to be perfect the first time.

So do not be discouraged if in the first attempt you do not reach your goal, you always learn something with repetition, with practice. Go ahead, continue in your purpose. 4th. I must analyze and evaluate my actions so as not to repeat the mistakes: Consider, that mistakes say more than successes about the performance and give guidelines to improve it. 5th. I must maintain interest, enthusiasm, dedication and persevere in my actions: Keep your self-esteem always high, without losing objectivity, with emotion and all your senses alert to achieve success. 6th. I use my best in all my actions: Don't be stingy in using your potentialities, apply them all with love and self-confidence. 7th. I consider the situation according to the current variables: It uses the previous successes, as well as its teachings for the planning of future objectives, but always taking into account the current variables.

8th. I am Bold: Apply the planned strategies without fear, if they are not suitable change them, but do not despair. You will achieve the goal. 9th. Each action leaves a learning: There are no failures, only results; accept responsibility for your actions. Every phase of life gives a lesson learn it. 10th. I am a sociable being: Consider your social environment, peers are the main allies, because somehow, they give part of their experience and that contributes to enrich your intellectual baggage. Do not disdain another for his condition, social and intellectual, respect him. Positive actions always fill the creative energy, indispensable force to keep the spirit free. Be free and you will be creative. The techniques proposed above, then allow to prepare that intrinsic environment of the student to apply any type of strategies, even recognizing the great diversity existing when categorizing learning strategies, there are usually certain coincidences between some authors and three large classes of learning strategies are established: cognitive, resource management and metacognitive, the present study focuses on the latter.

Metacognition: Metacognition is the awareness and personal control you have over the knowledge you possess. It is also an internal cognitive process that generates behavioral and testable predictions [6] that it must be taught and learned. In this regard, metacognitive strategies such as those proposed by Nisbet and Shucksmith [14] such as cognitive modeling, interrogation and self-questioning metacognitive and cooperative education. Within this framework of the metacognition there are two areas of application that must be adopted by students of Medicine and related career in the opinion of the researcher: the meta-attention and the meta memory, both allow to develop in the student the levels of consciousness necessary to control and modulate the learning processes [7].

Meta attention: Meta attention is a psychological process closely linked to perception and memory so fundamental to learning that numerous difficulties are explained by attentional anomalies, either by alterations or by absences of strategies to attend. Develop knowledge attentional goal requires awareness of 1°. - The nature of the learning task requires the formulation of questions about the demands and instructions of the task such as: What should I do? What kind of activity is? What is it requested? Read, write, associate, remember, compare 2°. - The Attentional Strategy, this is according to the competence of each student in selecting the one that suits the nature of the activity to be carried out: compare in pairs, read slowly, focus, track by spatial regions etc [2].

3°. - Task quality is the last step in the process attentional goal to develop consciousness. The student must evaluate how he has carried out the activity if his work presents errors or not. To do this, you must self-formulation questions like: What has distracted me? What is done to correct distractions? Has the way of attending to do this work been useful to me? Before starting any resolution activity or task, processes must occur attentional goal referred to a methodological reflection of planning in which questions are asked, during the process a monitoring and then an evaluation as shown in figure 1.
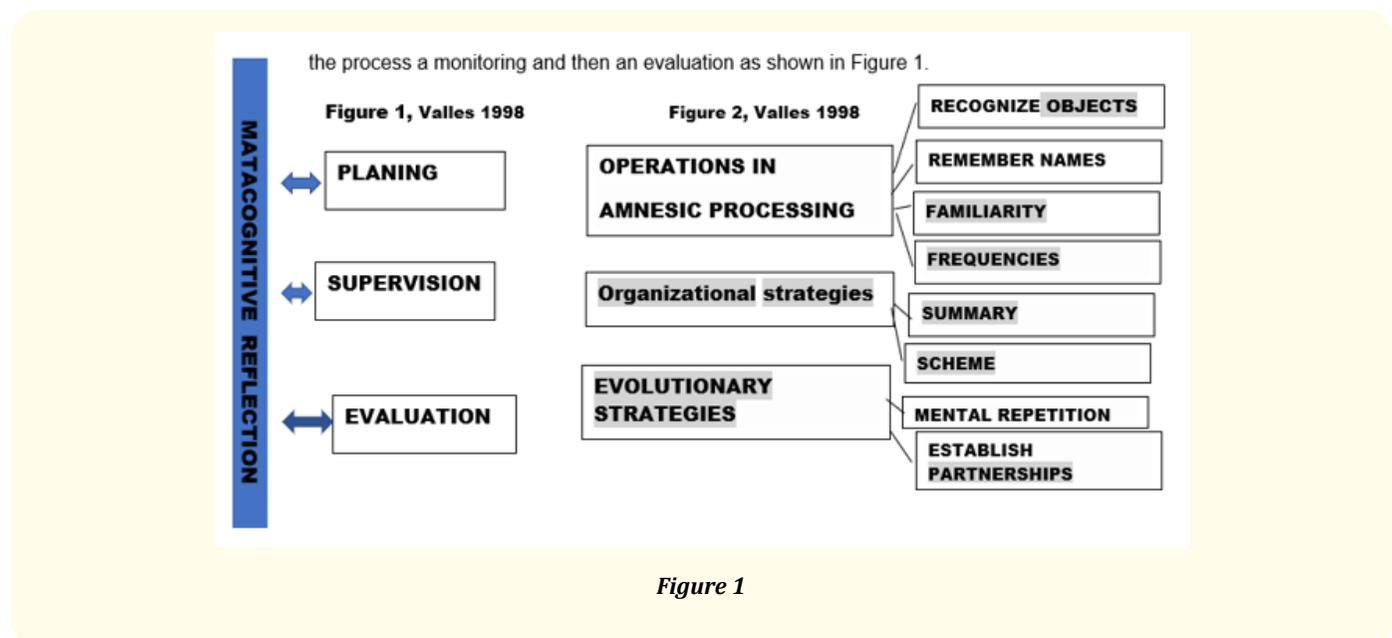

Figure 1

Of reflection on the process of memorizing itself, in which it is necessary to observe, record, encode, store and retrieve the contents that are learned. Flavell [3] in the same way, it is interesting to expose that students learn to distinguish between memorization and evocation; in the memorization should be used specific strategies according to the task, as well as learn a list of words, their previous classification, their organization into categories would facilitate their storage comprehensive. On the other hand, to remember the information or learning contents stored in the long-term memory will require to evoke them with the necessary frequency, to update them by rearranging the new information or new learning, for this, the routines, or keys of access to the information will be decisive.

To clear these ideas, it is interesting to point out some experiences find out for other researchers. For example, Schoenfeld [15] express that effective problem solvers use many strategies and special skills. That mean They would be useful. Other researchers such as Carson and Bloom [16] found that many experimental students with expertise in problem solving do not solve such problems in a linear work. Also, the same researchers used Schoenfeld [15] problem definition as compared to an exercise. In these lines they utilized an analogy of a skier to describe some procedures used by students to find out solutions.

The meta memory: The meta memory it is the degree of knowledge and memory that set has about our own memory and its peculiarities, that is, it is the knowledge and control of the processes of memory, its capacity, its limitations, and its operability. The meta memory it consists of strategies for recording, storing, and retrieving information involving processes [17].

To expand the concept of metacognition and denote its methodological implications, Tovar [18] proposes it as strategies that cover three dimensions through which the subject acts and develops tasks. (a) dimension of reflection, the subject recognizes and evaluates his own cognitive structures, methodological possibilities, processes, skills, and disadvantages. (b) management dimension during which the individual, who is already aware of his state, proceeds to combine these diagnosed cognitive components to formulate strategies to solve the task and (c) evaluation dimension, through which the subject assesses the implementation of his strategies and the degree to which the cognitive goal is being achieved, the subject builds the tools to direct their learning and ultimately acquire autonomy figure 2.
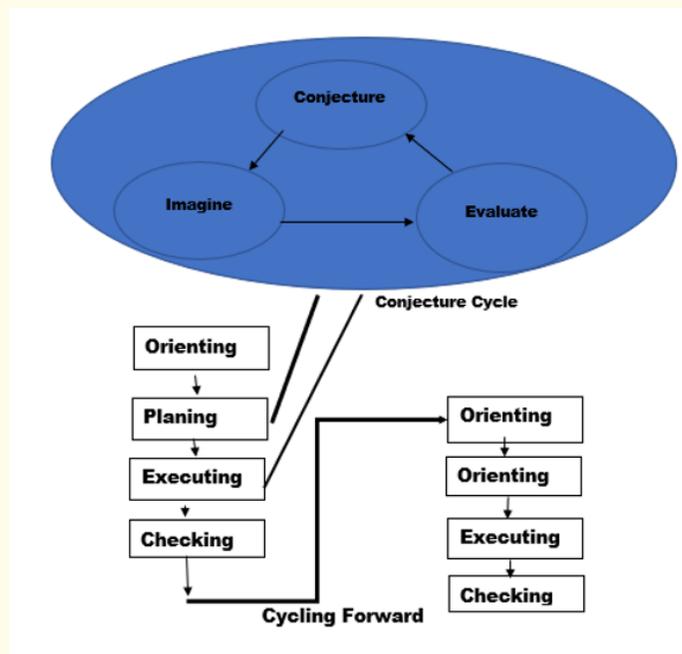

Figure 2: Problem-solving cycle (Carson & Bloom, 2005, p.54)

Meta cognitive model: Figure 3 shows structured by the following aspects: the teacher's posture, the student's motivation and the strategies, techniques, and methods of learning as shown in figure 3. Characterization of the appearances to consider the metacognitive model based on learning strategies for medical students. The results of this research process allow us to point out that the metacognitive model based on learning strategies for students of medicine is in addition to the complexity, which is the field of medicine, the graduate of this career must be trained to develop their activities and give timely responses to any health phenomenon that requires explanation. That is why, the development of this model will allow the effective development of students from the different disciplines of the career, in specific to Chemistry.

To continuation each of the aspects to be considered is described: First, the position of the teacher in the interaction with the students is a key point that allows a positive identification to achieve the objectives of the chair, in which the previous ideas that the students have of the topics that will be treated in classes must be considered, this with the intention of establishing a connection with the points to be mediated in the classroom, for an explanation more specifies that the concepts, theories and facts of the chemistry and then contextualize them according to a practical experience referring to any auxiliary discipline of medicine. This aspect regarding the position of the teachers is decisive given that it poses so that there is an optimal learning environment of the chemistry, it is necessary that there are creative didactic proposals mediated by metacognitive processes and that planning must be focused on being of students.

Another aspect to consider it is the reinforcement of the motivation to achieve, in terms of the improvement of the self, the cognitive impulse and a true filial drive what by strengthening this aspect, the student is committed to seeking strategies, methods and techniques that allow him to learn meaningfully the concepts and principles of the subject. Most importantly that learning allows you to exchange ideas with your peers and teachers, without fear of differing in some cases from their ideas. That meaningful learning will be the tool that will lead you to the achievement of better futures. One of the fundamental ideas that each individuality must apply, to establish its learning strategy, is to feel good about itself. Well, the way you feel will influence your performance.

On the other hand, the individual with high self-esteem establishes professional goals with great content of efficiency, effectiveness and taste of self-realization, a key aspect for any student of the career of medicine and related sciences, since one of the functions of a surgeon is to be actively involved in the education of society by making its members aware of the responsibilities in health care. Hence, the individual with high self-esteem plans their learning strategies within the context of meaningful learning (Figure 3).
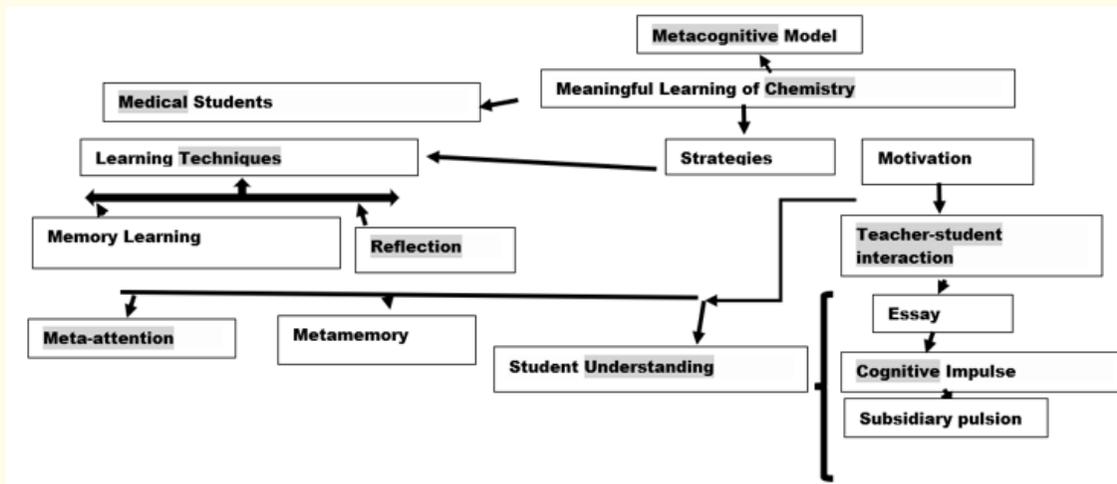

Figure 3: Model meta cognitive, Source: Author.

Recommendations

A few recommendations are currently being disseminated to achieve success in the studies; one of them refers to Superspeed learning or accelerated learning, specifically called "Suggestive Accelerated Learning Technique" (TAAS). Its main aspect consists of the combination of physical relaxation exercises, mental concentration, and suggestive elements to strengthen the ego of individuality and increase its memory, within a relaxing musical environment, and at the same time the material that must be learned is presented. Regarding learning strategies attentional goal, it is suggested to be aware of: (a) the nature of the learning task in which it should be required to ask questions of the demands and instructions of the task. (b) The attentional strategy must be selected according to the competence of the students and that it adapts to the nature of the activity to be carried out: compare, read slowly, focus, establish analogies between others and (c) the quality of the task that involves the evaluation of how you have carried out the activity, whether you present errors in it.

Another strategy is the meta memory that suggests the reflection on the own processes of memorizing since in the career of medicine the students require to identify the minimum parts of the human body, remember names, frequently handle some intervention techniques, create images, mental repetition of words among others, for this, it is necessary to observe, encode, store, and retrieve the contents that are learned. When the student is aware of his own memorization process, he will be more suitable for determining types of tasks, applying evocation strategies and all this aimed at voluntariness and motivation to learn.

Conclusion

Final considerations for there to be Meaningful Learning of the chemistry and contextualized to disciplines of the field of medicine should evaluate the conceptual structures of previous of the students, as well as the methodology to be used to address such knowledge and attitudes. This is with the aim that the teacher generates a planning considering the being the students and their intellectual abilities and thus promote learning strategies in the student. From that point of view, the theories of the metacognition have a link between students' knowledge and the strategies the teacher uses to motivate students and feel committed to selecting learning strategies for the promotion of meaningful learning from the Chemistry and its application in the field of medicine.

Bibliography

1. Martínez M. La Etnometodología y el Interaccionismo Simbólico (1984).

2. Valles Arandiga Antonio. Como Desarrollar La Autoestima De Los Hijos Editorial Eos 1998 2ª ed Rústica editorial ilustrada Muy Buen Estado Colección Educación y Familia. Guía para padres. Con ilustraciones en b/n 167 pp V (1998): 3238.

3. Flavell JH. "Metacognitive aspects of problem solving". In L. B. Resnick (Edition.), The nature of intelligence (1976): 231-235.

4. Mata L. "Incident processes in meaningful learning". Maracaibo: Editorial Grafiforca (2013).

5. De Cudmani LC., *et al.* "Towards an integrative model for science learning". *Review of Research in Education - SAGE Journals* 18.1 (2000): 3-13.

6. Mayer R. "Thinking and problem solving: An introduction to human cognition and learning". Glenview, Illinois: Scott, Foresman and Co (1977).

7. Gargallo B. "Procedures. Learning strategies. Its nature, teaching and evaluation". Valencia: Tirant lo Blanch (2000).

8. Weinstein C., *et al.* "Self-regulation interventions with a focus on learning strategies". In Boekaers M, Pintrih P, Zeidner M. Handbook of Self-Regulation". San Diego: Academic Press (2000): 727-747.

9.   Gonzalez C and Flores F. "Teaching work: innovative approaches to the design of a course". Mexico: Trillas (1998).

10. Schornack Gary and Beck Charles. "Strategies For Advanced Learning: How Ancient Wisdom Enhances Modern Technology". University of Colorado at Denver UCD-CBA Working (1997): 1997-1907.

11. Smith Alistair. "Accelerated Learning in Practice". Stanfford: Network Educational Press Ltd (2000).

12. Tracy Brian and Colin Rose. "Accelerated Learning Techniques Brian Tracy with Colin Rose". Niles, Illinois: Nightingale Conant Corporation (2013).

13. Pozo J. "Cognitive Theories of Learning". Madrid: Ediciones Morata (1989).

14. Nisbet John and Shucksmith Janet. "Learning Strategies". London: Routledge (2017).

15. Schoenfeld A. "Mathematical problem solving". New York: Academic Press (1985).

16. Carlson Marilyn Paula and Bloom Irene. "The Cyclic Nature of Problem Solving: An Emergent Multidimensional Problem-Solving Framework". Educational Studies in Mathematics 58.1 (2005): 45-75.

17. Metcalfe J. "Evolution of metacognition". In J. Dunlosky and R. A. Bjork (Editions.), Handbook of metamemory and memory (2008): 29-46.

18. Tovar J. "Cognitive assessment and autonomous learning, in Tecne Episteme Y Didaxis. Second congress on the training of science teachers". National Pedagogical University of Bogotá (2005).