



## ESTRATEGIAS Y TÉCNICAS DIDÁCTICAS PARA FORTALECER LA EDUCACIÓN EN EL PROCESO DE ENSEÑANZA -APRENDIZAJE EN ESTUDIANTES UNIVERSITARIOS

Esp. Luisa Paulina Chafra Romero<sup>1</sup>, Ing. Mónica Dayana Ortiz Erazo<sup>2</sup>, Lic. Claudia Gabriela Riera Quito<sup>3</sup> and Lic. Silvia Lorena Naranjo Haro<sup>4</sup>

<sup>1</sup>Faculty of Public Health of ESPOCH.Riobamba, Chimborazo. Ecuador

<sup>2</sup>School of Basic Education "Gral. Juan Lavalle". Riobamba. Ecuador

<sup>3</sup>Educational Unit "Amelia Gallegos Díaz". Riobamba, Chimborazo, Ecuador

<sup>4</sup>Educational Unit Fiscomisional "María Auxiliadora", Riobamba, Chimborazo, Ecuador

### ARTICLE INFO

#### Article History:

Received 8th February, 2018

Received in revised form 24th March, 2018

Accepted 20th April, 2018

Published online 28th May, 2018

#### Key words:

Strategies, techniques, didactics, teaching, learning, pedagogical practice.

### ABSTRACT

The current era presents a constant renewal of knowledge, therefore it is necessary that all actors linked to the educational field apply teaching and learning processes that allow the development of thought at its different levels, for which, it is important to have instruments that contribute to the development of skills, skills that allow the student to clarify their knowledge, differentiate and organize them; However, the reality that is presented in the country with respect to the academic results in education and cognitive learning is very worrisome, results that allowed the emergence of research with respect to the work that unfolds in the classroom, knowing what is the role played by the student and the teacher, what are the strategies and techniques used in the teaching and learning process and what are the difficulties that students present as a result of the methodology implemented by the teacher, which has a livelihood Theoretical, provided by the contribution of research conducted on this topic based mainly on the current constructivism, and active techniques that allow strengthening the teaching and learning process of university students. The present work intends to analyze the strategies to strengthen the process of "Teaching-Learning in the University Students" with the new developments and points of view on diverse strategies and techniques for the treatment of the educational model starting with a detailed description about the complexity of the strategies and techniques in the teaching of a correct educational process, then, some points concerning the didactic principles that characterize modern education are analyzed and, finally, some conceptions are considered for the development of the learning and teaching process of this discipline with the purpose of contributing to the correct teaching-learning process in an effective and fruitful way.

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### INTRODUCTION

Education has evolved through history and its pillars are cognitive knowledge and ways of teaching, on these the methodology has been built, the teaching - learning process, the results, the analysis, so that their manifestations come from the time of the Greeks, the Hellenes, the epoch of Euclid, Diophantus, Archimedes who used his cognitive knowledge in the construction of appropriate instruments for that time, up to the present, in which he is considered to know the techniques of modern

learning, is to know life itself, deepens in inspiration, abstraction and generalization originating a knowledge that evolves in the contribution of committed and visionary people who consider this methodology as the mother of all (Benalcazar, Almendáriz y Reascos, 2008). The knowledge of teaching strategies and techniques is very important in the classroom of every teacher, since what surrounds us has its cognitive origin, so that its study cannot go unnoticed and within this scope the study of how the knowledge in educational institutions, considering the relevance of methodologies in the

\*Corresponding author: Esp. Luisa Paulina Chafra Romero

Faculty of Public Health of ESPOCH.Riobamba, Chimborazo. Ecuador

scientific and technological development that takes place in the present century.

In the present investigation, an analysis of the teaching and learning process developed by teachers was carried out, a reality that constitutes a premise of what happens in other educational institutions in the country, and that directly affects the generation of skills, skills, deficient cognitive skills that appear in the different levels of education, becoming increasingly worse if alternative solutions are not considered that start from the intrinsic decision of all actors involved in the field of education and especially teachers, a fundamental pillar to achieve the necessary changes in education, within the processes of economic and social development.

At present the teaching - learning process is going through a serious crisis in Ecuadorian education, this is demonstrated by the results of the evaluations made to students nationwide in recent years, in which it can be seen that there are some problems in teaching and learning in education. For this reason, there is a need to have inputs on teaching methodologies (strategies and didactic techniques related to continuing education), both for students of the Universities that will be teachers of Mathematics, as well as teachers who are in service, in order to propose teaching alternatives that allow reflection on the ways of teaching and that go beyond the traditional model of teaching and learning of Mathematics in education (Robalino, 2005).

The problems that exist in the teaching-learning process in education have been visualized at the national level and therefore in Higher Education Institutions, increasingly, the evaluations that are carried out by the Secretariat of Higher Education, Science, Technology and Innovation (SENESCYT), or some other institution interested in knowing the educational reality of the country, present very alarming results at all levels, be of basic education and much more at secondary and higher level, detecting a great problem in the development of skills, skills and competencies necessary to adapt to the globalized world in which we live today and which demands quality in the capacity for knowledge management in all its social dimensions (Orrantia, 2006).

This reality is very worrying if we want to leave the group of underdeveloped countries ", considering that education in the present century is the key to achieve the much desired" economic and social development, and within this the contribution it means for others sciences and even for the development of technology university education to create professionals with evolutionary skills.

The continuous training of the teacher is, in the current context, an essential aspect to improve the quality of teaching and learning, and the very viability of any reform of the educational system in which the country is located, it is necessary to review the activity teacher from the practice, to adapt to the transformations of the own object of education and to the social context and like this improve the educative competitions in the national scope

Participatory techniques, as part of a widely used methodology, lead to an active intervention of teachers and students in the teaching and learning process and that serve as a supplement to the teaching-educational work in

the educational process, where their employment allows a greater linking students in the acquisition of new knowledge, through analysis and reflection on topics related to their level of interest.

The educational activity within the teaching - learning process not only contributes to the formation of students in the field of logical-educational thinking, but in other very diverse aspects of intellectual activity such as creativity, intuition, the ability to analyze and of criticism. It can also help the development of positive habits and attitudes towards work, favoring concentration on tasks, tenacity in the search for solutions to a problem and the necessary flexibility to be able to change points of view in the approach of a situation. Likewise, and in another order of things, a relationship of familiarity and taste towards the cognitive educational process that can contribute to the development of self-esteem, insofar as the learner comes to be considered capable of dealing autonomously with numerous and varied problems (López, 2009).

As stipulated in the aims of Education, the educational process is important because it seeks to develop the student's thinking capacity, enabling him to determine facts, establish relationships, deduce consequences, and, ultimately, enhance his reasoning and ability to act; promote the expression, elaboration and appreciation of patterns and regularities, as well as their combination to obtain efficacy; to ensure that each student participates in the construction of their cognitive knowledge; stimulating cooperative work, the exercise of criticism, participation and collaboration, discussion and defense of one's own ideas.

The knowledge available to the student is subject to constant improvement. There is assimilation of new knowledge and accommodation of existing ones. Therefore, it must be learned as a coherent whole and not as separate parts. This capacity for connection works in two senses: covering both relationships between ideas and the relationship between thought and the real world. We must give structure to what is being learned. This has been called 'interweaving the threads of learning' (López, 2009).

Consequently, the purpose of the teaching - learning process in education is to build the foundations of logical-cognitive reasoning in students, and not only the teaching of existing traditional didactic language. Only in this way will education be able to fulfill its formative functions (developing the skills of self-knowledge and abstraction), instrumental (allowing subsequent learning in different areas), and functional (enabling the comprehension and resolution of problems of daily life), to train students that interpret, argue and propose; that they are capable of giving meaning to a graphic text, that when supporting project alternatives to reconstruct a general knowledge. The use of strategies allows a better methodology, considered as ways of responding to a certain situation within a conceptual structure (López, 2009).

Given that knowledge is dynamic, talking about strategies involves being creative in choosing between the most appropriate ways or inventing new ones to respond to a situation. The use of a strategy implies the mastery of the conceptual structure, as well as large doses of creativity

and imagination, which allow discovering new relationships or new senses in already known relationships. Among the strategies most used by students in basic education are estimation, approximation, modeling, the construction of tables, the search for patterns and regularities, the simplification of difficult tasks, checking and the establishment of conjectures.

It is very important to ensure that the educational community understands that the educational process is pleasant if its teaching is imparted through an adequate orientation that implies a permanent interaction between the teacher and his students; so that they are capable through the exploration, of the abstraction, of classifications, measurements and estimates of arriving at results that allow them to communicate, make interpretations and representations; in short, discover that cognitive education is intimately related to reality and the situations that surround them.

Undoubtedly, the teaching - learning process is related to the development of rational thinking, it is essential for the development of science and technology, but it can also contribute to the formation of responsible and diligent citizens in face of situations and decisions of order. National or local and, therefore, to the maintenance or consolidation of democratic social structures.

#### **Development**

#### **Teaching Process – Learning**

#### **Teaching**

To develop the research on the teaching and learning process should start from the conception of these two concepts: Teaching is Action and effect of teaching, is made according to the learner, with the aim of "promoting effective learning" (Bastidas, 2000).

#### **On the other hand, the act of Teaching According to Bastidas (2000) Includes the Following Elements**

1. Teacher
2. Student
3. The matter
4. A method that includes procedures with strategies and / or techniques, on the part of the one who teaches and the one who learns.

Elements immersed within a process of constant communication, and within this process they influence directly and significantly.

#### **Teaching Styles**

It is the set of forms that adopt the relationships between the teaching and learning elements in the educational process. To classify teaching styles, the attitude of the teacher to the subject and its students is considered: Democratic (stimulates learning), autocratic (imposes) and anarchic (abandons its responsibility), (Bastidas, 2000). The teaching style that the teacher adopts within the didactic process will determine the level of learning of their students and therefore the academic results, as well as the commitment assumed to the subject will be reflected by apathy or intrinsic motivation, a determining aspect to achieve develop meaningful learning

#### **The learning**

According to Bastidas (2000), "is a dynamic process of interaction, in which plays an important role: the skills, skills, attitude and prior knowledge of the study techniques, by the student, as this should not only receive but contribute, within this are internal factors (personal conditions) external factors (environment)"

According to Tarry (1993), "learning is defined as a change in behavior, relatively permanent, which occurs as a result of experience. By using the expression "relatively permanent", this definition eliminates fatigue and motivational factors as possible causes of change. When affirming that the change is due to experience, mature factors are also excluded as causes ".

Learning according to the authors cited above is defined as a change in human capacity or disposition, relatively durable and also cannot be explained by maturation processes, and is expressed in the change in the way of acting or thinking and how it points Castelnuovo (2007, page 10) learning always implies development.

#### **The Factors that Facilitate Learning are the Following**

- a. The motivation which is to have the desire to do something.
- b. The concentration, is the ability of interest and curiosity in the subject.
- c. Attitude, is to make a decision and actively participate.
- d. Organization, is to know the subject which is going to develop and have a structure
- e. Understanding, understanding and understanding the meaning of the topic that will be handled.
- f. Repetition, the review where doubts are clarified and helps us to remember the main ideas of the studied.

#### **Constructivist Model**

Next, the epistemological foundations of one of the most representative currents within the pedagogical currents are presented, the same one that has obtained a wide acceptance in the last years in the educational field.

According to Zubiria (2001) this theory was developed during the twentieth century by Piaget, the constructivists have managed to reach an emerging consensus among the academic community of psychologists, educators and educators, according to the precise expression of Novack. Jean Paige (founder of genetic or evolutionary psychology), his studies on epistemology, try to give an explanation of how we come to know the external world through the senses (Zubiria, 2001).

David Ausubel.-his theory diverges with behaviorism and partly with some approaches of Jean Piaget and J. Bruner. He raises his theory about meaningful learning and considers two types of learning: by repetition and meaning. Lev Vygotsky. - "The development of higher functions is built through operations and mental skills, which are only acquired through social interaction."

According to Vygotsky "all the higher psychological functions are internalized social relations, they exist first in a social plane (outside) and secondarily they are

incorporated at the individual level (inside)", in other words, we learn them from others (Martínez, 1999).

***The Methodological Principles allow Guiding the Teaching-learning Process. In Thisarea, Constructivist Theories Suggest Essential Postulates***

- The students must become involved members and committed to the planning, execution and evaluation of the educational process.
- Students are active and reflective agents of the teaching-learning process.
- Methodological strategies should promote the students' comprehensive, critical and creative abilities.
- Methods should provoke the democratic relationship in classroom work.
- Promote the study of a topic or problem from different points of view, through research, dialogue, discussion.
- Starting from the previous learning that the student has in his mental structure.
- Encourage autonomous learning skills.
- Promote the area of potential student development
- Promote individual and group work.

In general, it is pertinent to specify the methods, techniques, procedures and didactic forms that are framed in this area to achieve the training and academic preparation of students. According to Castelnuovo (2007) the aforementioned theories propose as an essential methodology for the fulfillment of the aforementioned principles

- Investigative method
- Problémico method
- Discovery, rediscovery
- Workshop
- Projects
- Communication-dialogue
- Discussion, debate
- Case study

The considered methods are constituted as axes to develop teaching and learning processes -didactic articulated to the investigation and to the connection with the society.

As authors, we agree with the statements made by Bastidas, because for an optimal learning, someone who teaches is needed, the teaching process must have several elements such as the teacher who gives a chair to the element to be learned, the student, who is the person that will absorb the knowledge imparted by the teacher and, most importantly, there must be an element of learning, that is, the subject that the teacher will share through a method by which the student can efficiently capture the knowledge given by the teacher.

Bastidas when mentioning that learning is a process where the individual interacts with internal and external factors I conclude that the student to acquire new knowledge must have previous knowledge, that is to say that this must have previous knowledge that can contribute in the new knowledge to acquire, also When we talk about our own study techniques in which the student will contribute to the moment of learning, since here the skills and abilities

that the student will develop when learning or studying will be applied, Tarpay also states that learning is based on experience, that is, applying the knowledge acquired so that learning is a process of experimentation of knowledge for the individual.

The factors that influence in a correct learning are very important since of these it depends that the student absorbs the new knowledge effectively, these also depend as much of the internal factors as of the external factors, the internal factors are those skills that the student has to the moment of learning then within these factors are the dedication, concentration, understanding, repetition, organization and attitude; the external factors are in environment, the teacher and the methods that are used so that the student acquires the knowledge that is going away to impart, then the mixture of these two factors cause that the student learns of a correct way.

The constructivist model also talks about the construction of new knowledge through methods used and proven by some scientists such as Ausubel and Lev Vigotsky, who dictate some methods where the student is involved, which will develop activities such as collaborative works, individual works, projects, etc.

***Teaching Strategies and Techniques in the Teaching Learning Process.***

In the field of general didactics and education in particular, a very important set of learning and teaching conceptions has been developed, which directly affect all areas of scientific knowledge treated in school institutions, which have found high receptivity in the mathematical educators. For more than 55 years, with the contributions of Polya (1978) and later, in the early sixties, Freudenthal (1983) with his famous book for everyday life gave impetus to the discussions and the development of new conceptions in the field of learning and teaching. Among the most outstanding we can mention the following: the teaching of the cognitive process from its own genesis, the education oriented in the resolution of problems of the daily life, teaching of the evolutionary process oriented towards formative objectives, continuing education from the point of view of the applications and modeling, project-based teaching; learning and teaching the educational process taking into account the weekly plan, free learning and work in stations and, finally, systematic education through the use of information technology.

These concepts are often related to each other and can be applied indiscriminately by teachers during the development of learning and teaching activities throughout the school year. Guzmán (1993) incorporates other strategies such as games, history or evolutionary cognitive experimentation.

***Didactic Processes*** - is the set of specific activities, carried out by the teacher and the student that must be followed to fulfill the objectives of the teaching-learning system (SEA) (Bastidas, 2000).

***Strategy*** - is the ability to coordinate (direct) him BE, answer the question: How? It includes activities that are generally actions carried out by the teacher and / or student. It is an adjustable process or the set of procedures

that ensure an optimal decision at each moment, include different techniques (Bastidas, 2000).

**Technique** - it is a particular way of using an instrument and / or resource on which teaching is supported. Answer the question: Why? According to Oviedo, three types of techniques are presented: audiovisual, written, verbal. Each of them contains different forms or modalities to be used for specific purposes (Bastidas, 2000).

If the teaching in the educational process is oriented towards the construction of evolutionary knowledge through active work and collective discussion, then the rules or applications can be elaborated through a process of inquiry, estimation, suspicion, testing of particular cases, etc. A good education should be characterized by the incorporation, in the learning and teaching process, of teaching strategies that give students the opportunity to participate in the demonstration of cognitive relationships. Education, more than any other specialty, is constituted by demonstrations of rules, and affirmations and by problems in general.

The need to demonstrate an affirmation in the teaching - learning process becomes, following Polya (1978), Schoenfeld (1985) and Guzmán (1993), for example, in a problem or several cognitive problems. That is, the need for demonstration leads to the approach of one or more problems, whose solution requires a method certainly systematic and with a certain degree of rigor. This must also be one of the tasks of student education.

The active techniques are didactic procedures used by the teacher in order to ensure that the student lives and discovers learning, and as it points out within the constructivist current, they allow the construction of the human being through the use of didactic instruments.

Techniques of audiovisual stimulation, are the set of didactic resources, with their respective procedures that stimulate the attention of the student through sight or hearing, or both ways at the same time.

**Written Stimulation Techniques** - are a graphic representation of the arrangement of the elements of something, the relationships between various magnitudes, are a graphic diagram of the physical elements that make up a team, an organization or a process.

**Techniques of Verbal Stimulation:** they are interrogations that are carried out so that the student responds. Facilitates communication between the student and the teacher.

Strategies and didactic techniques, their proper use allows the teacher to adapt them in the environment in which they will develop the teaching-learning process, through reflection and daily practice, in which they must also consider the level of development of the cognitive structures, thinking processes and student interests.

Activity is the set of actions, operations or tasks of a person or entity, which are executed to achieve an end or goal (Castelnuovo, 2007).

Within this movement, a trend is highlighted whose main intention is to enhance the importance of the teaching and learning system, in consideration of which a compilation of ideas, reflections, notes and activities is proposed, in

order to follow an organizational learning and development .

## ACTIVE METHODS

- a. The heuristic method. - leads the student to discover for himself the conceptual content that is intended to teach, is a mental and didactic activity.
- b. The method of discussion or debate. - consists of the interaction of students with each other and / or the teacher around a topic or issue.
- c. Discovery. - allows the student to discover the meaning of new knowledge as a result of their own know-how (its construction) and depends on the ideas and the handling of the procedures.
- d. The playful method. - seeks to raise awareness, sensitize and achieve changes in attitudes, this method is to make the game an educational process based on the constant recreation of knowledge (Benito, 2001).

The methods used will be effective as long as the student makes an effort to learn for himself, for example in the heuristic method it is said that there is self-learning but we know that today students are poorly motivated and easily distracted by the means surround, such as the internet, television, radio, etc.

### Active Learning

Active learning refers to the theory that learning is a process of personal construction, through interaction. Therefore the student must be active during the process, not passive receiving information. It is the type of learning proposed by the constructivist model (Castelnuovo, 2007, page 54).

That is to say, the student has the obligation to act in classes, interact with his classmates about the topics studied in the classroom, and in the same way the student must answer all the doubts that they have in mind, since by remaining with the gaps It will not capture the following topics that are related to the previous ones, so self-learning is a difficult process but it is always achieved when you want to learn.

### Teaching Techniques – Learning

Teaching, in particular, is full of unexpected situations, which we could point out as an unknown world, crossed by questions rather than solutions or answers. It is not often that students easily provide direct solutions to the variety of problems presented continuously in classes in virtually all subjects. If this happens, it is because the students are trained in solving problems or because they receive some suggestions or indications from the teachers or from the material that allow them to find a strategy for the definitive solution of the respective problem.

The learning and construction of methodological terms, the understanding of strategies and their demonstration, the mastery of demonstration strategies, the development of cognitive thinking, the applications, learning generating problems and the modeling process have to be linked to a conception of education oriented in the resolution of real situations. It is not really about the degree of difficulty that the problems may have, but rather about their quality

and the respective didactic structure, which almost always determines the proper development of the learning and teaching process.

### ***Teaching Oriented Towards Educational Objectives***

In his analysis Professor Heymann considers that school or university education must be profoundly transformed and redefined its objectives, since the education that is currently working in schools and the way in which the process of learning and teaching in institutions is developed does not contribute really with the integral formation of citizens (Heymann, 1996).

The orientation of education towards educational objectives aims to reformulate teaching in general in such a way that students, teachers and the population in general conceive the educational process as part of their school education, which can serve them well for the development of their individual intellectual potentialities for a better and efficient development in society. It is not about rewriting the teaching plans in terms of a didactic based on operational objectives, which has been widely criticized, since the beginning of the eighties Gimeno (1998), which tried to make sense of the objectives of teaching trying to write in operational terms the existing objectives in the teaching plans. One of the strongest critics of this trend was Hans Freudenthal (1983, p.101), who considered that the problem was not the way in which the teaching objectives would be written, but rather the importance and usefulness of the educational content for the population.

Nowadays, fortunately, the vision of the operational objectives has already been overcome, both from the point of view of the theoretical discussion and of the educational practice, and the task is, as pointed out by Heymann (1996), Damerow (1986). Keitel (1989) in conceiving an education whose fundamental objective is to actively contribute to the integral formation of all human beings.

Although the idea of an education conceived within the vision of the operational objectives has already gone out of fashion and is imposed, with greater force, a mathematical education whose fundamental objective is the basic general education, we must be attentive because one of the few consequences The negative effects of international comparative studies is the desire of many countries to be in the first places in terms of school performance, which could lead to a reformulation of education from the point of view of operational objectives (Mora, 2003 ).

### ***Teaching - Learning Based on Educational Applications and Modeling***

This has been one of the most important trends in education, since these, from very remote times, have been developed thanks to the diversity of daily problems whose solutions require, almost always, the application of cognitive concepts that range from the elementary basic orientation to highly complex theories or social models. In this sense, educators have been concerned, lately with greater emphasis, for the incorporation of applications and the respective modeling in the learning and teaching process (Freudenthal, 1983).

Traditionally, practical problems are presented, those related to reality, in the form of verbal tasks. This does not mean a whim on the part of the teachers of diverse areas or of the authors of instructional materials such as textbooks. To facilitate the work with the students within this didactic conception, it is recommended, on the one hand, to follow one of the diverse existing models in the respective literature on the educational cognitive modeling process. The best known consists of four moments (analysis of the real situation, elaboration of the real model, construction of the cognitive model and results obtained) and five phases (idealization, systematization, collaborative work, interpretation and analysis of the results and validation). Secondly, it is recommended within this didactic perspective, the elaboration of conceptual structural schemes, which will help in the construction of relationships such as cognitive functions that compactly explain the real situation originally proposed.

### ***Teaching-Project-Based Learning***

From the point of view of the current pedagogy and in accordance with the increasing demands of the inexorably dependent societies of technology, project work emerges as a necessary and indispensable method of work-oriented and focused teaching in the action of the students. The basic reason for this didactic conception, as widely expressed by Freire (1973), is to make teaching break with that idea in which students are only passive recipients of information. This idea of teaching conceives students as restless people who can reflect on different topics and develop strategies to solve problematic situations of a certain complexity.

We can define, in a summarized way, the method of projects as an organized search for answers, by cooperative work among students, teachers, parents, specialists, members of the out-of-school community, etc., to a set of questions surrounding a problem or relevant issue from the social, individual and collective point of view, which can be worked inside or outside the classroom. The work activities, determined and organized by the general idea of the respective project, are as important as the results of the different actions or the product obtained at the end of the development of all phases of the project.

### ***Teaching - Learning Based on the help of the Computer and the Corresponding Programs***

Currently, the use of the computer has been extended to many parts of the world, in the development of the learning and teaching process, it would be complex to describe in a few lines the multiplicity of aspects related to this subject. We will try only to point out some elements that characterize the influence of computer science, more specifically of the computer, in the field of cognitive education. There are many authors, in different languages, who deal as much with theoretical reflection as with different empirical research works in order to optimize and strengthen their use during daily work in different school institutions.

Most higher education institutions do not have laboratories or computer centers for the development of up-to-date, modern and technologically meaningful education. To this lack are added the difficulties related to the training, preparation and permanent updating of teachers in this field.

The important thing, regarding the application of these programs in the teaching-learning process, is its adequate and efficient use for the understanding of theoretical concepts. The only goal of finding a solution by applying a process that is not interesting or important currently. The idea is to use these programs in order to visualize with greater precision and comfort the ideological constructions of the students, not only in the conceptual interpretation, but to understand with greater ease and motivation some phases of the construction of structures and cognitive demonstrations, to implement strategies Heuristics in the resolution of tasks and encourage the independence and creativity of students.

### **Learning in Procedures and Teaching Strategies**

The procedures of didactic techniques and strategies play a very important role in the learning of the student, rather than in professional lives, although when a statement is demonstrated or a concept is developed a procedure is developed characterized by certain logic and sequence of Steps. The procedures are actually schematized solutions of a certain task and we can also see them as directed processes; however, there is a small difference between the two. The former are more complex and are part of everyday work, while the directed processes are especially focused on following a set of sequential indications to solve some very specific types of tasks, for which there is a strictly ordered and rigorously mechanical path.

The didactic solution, then, is not to suppress the directed processes or teaching procedures, but to see them as a part of the collaborative work process within the resolution of tasks, projects or applications with their respective systematic modeling.

The development of the process of learning and teaching in students, which is understood from preschool to the first semesters of the university, is much more complex than what teachers, professionals and the population in general think. In the previous paragraphs we have briefly exposed some aspects that must be constantly taken into account both by teachers and by all those people who participate directly or indirectly in the educational process. In the following pages we wish to expose, also succinctly, aspects inherent to some very important conceptions about the development of the learning and teaching process.

### **Collaborative learning**

The strength and success of the cooperation, is to structure the cooperation among the students, that these are physically close to each other, discuss and share the material, help others, for this it must be considered according to Castelnouvo (2004, p.58) who cites Johnson, Johnson & Holubec (1990) five essential elements:

1. Positive interdependence.- the success of the group is above individual success through the

establishment of common goals, joint rewards, assigned roles

2. Face-to-face promoter interaction.- the students use the ability to help, encourage and support
3. Individual responsibility
4. Social skills
5. Group process

These five elements are what differentiate collaborative learning groups from traditional discussion groups, and a well-structured learning lesson from a bad. The distinction between collaborative work and cooperative work is established by Panitz (1999, cit. Blasco *et al.*, 2002). While the first obeys a philosophy of interaction, the second is an operation structure designed to facilitate the agreement of the product or specific purpose of people working together in a group.

### **Learning by Problems**

To use this technique you must extract or consider a problem in the environment to get a solution.

Objective: Students in groups will synthesize and build knowledge to solve a real problem, or based on reality (Castelnuovo, 2007).

Skills and competences are based on solid systems of knowledge, skills and values, in which different sciences and learning areas intervene with a multidisciplinary approach. These skills are developed throughout the process of student training, from each of the subjects studied and throughout all six years of study.

This conception of learning by problems implies that the curricular design and the didactic projection of each one of its levels, are sustained in the identification of the main basic problems of the profession and in the creation of a system of them, that integrates with didactic aims both real and simulated, when those are feasible according to the demands of the career and make possible the didactic conditions that correspond (Oermrod, 2005).

The ABP technique, as it is also called, facilitates the identification of learning needs and their application. It is useful to begin the approach of a topic, to promote the specific practice or to improve ties with the educational community (Castelnuovo, 2007).

### **Discovery Technique**

It is the set of processes guided by the teacher to facilitate the student's discovery of the truth.

#### **The stages of this method are the following**

**Definition of purposes:** in this stage the student becomes aware of what is going to take place and a problem arises.

**Exploration of roads:** The student interested in solving the problem or reaching a new knowledge, looks for different alternatives of solution.

**Presentation of reports:** in this stage the student exposes the results of the investigations orally or in writing.

**Evaluation:** in this stage the presented reports are analyzed and conclusions are obtained.

**Fixation and reinforcement:** here the acquired knowledge is transferred.

## Rain of Ideas

It consists of expressing ideas, criteria, and opinions around a matter presented by teachers.

### Strategies

- Present the matter
- Issue ideas, criteria, opinions about the presented matter
- Record on the board the ideas expressed by the students.
- Highlight the most outstanding idea (Bastidas, 2000).

As authors we can define that strategies and didactic techniques are those techniques applicable to students of different grades ie school, college and university since they are used at different levels of students, teaching is those that they are made between the teacher and the student, that is to say that there is an interaction of both individuals where the different techniques are applied, which are all the methods, techniques and resources of both the teacher to teach and the student to learn.

Strategies and didactic techniques, their proper use allows the teacher to adapt them in the environment in which they will develop the teaching-learning process, through reflection and daily practice, in which they must also consider the level of development of the cognitive structures, thinking processes and student interests.

The teaching-learning techniques are divided into several which have a purpose, develop the reasoning skills and mental agility for students and teachers who teach their subject, for example Freire tells us that students at the time of making projects are Passive carriers or recipients of the information they consult, since here they can only give their point of view to already existing topics and contribute with their own ideas to strengthen their critical skills.

In our quality of actors we do not fully agree with Castelnuevo since when we say that when developing collaborative works there are some students who do not contribute to the elaboration of it, but are only listeners or observers and do not acquire any type of knowledge, although the purpose of this work is the exchange of information and the interaction of the members of the so-called working groups, so when performing this type of technique, the teacher must act effectively by motivating the students and making groups equal that is to say that they should contain students that provide more knowledge to those who are just acquiring learning skills.

## CONCLUSIONS

Through the research carried out it can be affirmed that the strategies and didactic techniques of the Teaching - Learning process in university students can be formulated in the following way:

Teachers of the various institutions despite having knowledge of the existing active techniques, and the level of their influence within the teaching and learning process, do not take the correct initiative in their application, the techniques they use are considered routine by students, there is no process that includes both social interaction and internal construction by the subject, an aspect that

influences the emergence of the necessary motivation to achieve significant learning in the various subjects.

The use of active techniques within the teaching and learning process in the establishment is minimal, causing students to be disinterested and unsuccessful in learning and often rejecting the subjects, dropping out of the educational institution, resulting in non-compliance with the objectives in which the student is the main actor of knowledge and it is in this field where the teacher must establish the appropriate didactic methodology in his role as facilitator of knowledge.

There is no adequate planning of classes turning them into events without importance in the training of students or repetitive, passive and useless information to be applied as a knowledge within their work of daily work and according to the different realities and demands of the current society.

The contents fulfill the fundamental role, in this case, of explaining phenomena and linking concepts of different scientific disciplines, in this way students can acquire, in addition to specific knowledge, work methods, relationship and knowledge unit and mastery of procedures for the solution of complex situations that can occur frequently in life.

They can be put into practice in the different levels of the educational system, combining these teaching strategies with each other, everything will depend on other factors such as: the number of students in the course, the available resources, the contents that will be worked on, the predominant interests in the course, etc. The importance of an education within this perspective lies, precisely, in the frontal and definitive break with the purely dynamic didactic vision, centered on the teacher and decontextualized.

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