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THE DEVELOPER LEARNING OF MATHEMATICS, DIDACTIC AND METHODOLOGICAL BUDGETS

EL APRENDIZAJE DESARROLLADOR DE LA MATEMÁTICA, PRESUPUESTOS DIDÁCTICOS Y METODOLÓGICOS

Yoandi González Monsibáez[1]
E-mail: yoandigm9212@gmail.com
ORCID: https://orcid.org/0000-0002-1479-1726
Deliena Duvergel Vázquez[1]
E-mail: deliena231295@gmail.com
ORCID: https://orcid.org/0000-0003-2432-5363
[1] Universidad del Ministerio del Interior "Eliseo Reyes Rodríguez Capitán San Luis". La Habana. Cuba.

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ABSTRACT

The learning of mathematics constitutes a necessity for the educational systems of today´s world and especially for Cuba. Correspondingly, the transformations of Cuban higher education, require as requirements for the direction of the teaching – learning process, the promotion of the exercise of thinking, the development of cognitive independence and strategies and motivations to learn, as well, how to conceive the class from a developing conception. Due to the importance for the Computer Engineering career of mathematics learning, research carried out aimed at determining the main considerations to achieve a developer learning. In this review article, the main results of a bibliographic search on the subject and the main criteria of the researcher in this regard are present.

Keywords:

Developer learning, math teaching-learning process, teaching-learning developer process.

RESUMEN

El aprendizaje de la matemática constituye una necesidad para los sistemas educativos del mundo actual y en especial para Cuba. En correspondencia con ello, las transformaciones de la educación superior cubana, precisan como exigencias para la dirección del proceso de enseñanza-aprendizaje, la promoción del ejercicio del pensar, el desarrollo de la independencia cognoscitiva y de estrategias y motivaciones para aprender a aprender, así como concebir la clase desde una concepción desarrolladora. Debido a la importancia para la carrera Ingeniería Informática del aprendizaje de la matemática, se desarrolla una investigación encaminada a determinar las principales consideraciones para lograr un proceso de enseñanza – aprendizaje desarrollador. En este artículo de revisión son presentados los principales resultados de una búsqueda bibliográfica sobre el tema y los principales criterios del investigador al respecto.

Palabras clave:

Aprendizaje desarrollador, proceso de enseñanza – aprendizaje desarrollador, proceso de enseñanza – aprendizaje de la matemática.

INTRODUCTION

The XXI century is marked by a continuous change of the knowledge in the society, what demands that the universities form professionals by means of methods and learning styles that make them constantly be overcome. This requires changes in the teaching - learning process to achieve a learning developer along the life that facilitates to give solution to the general problems and frequent of the professional's pattern.

Many of the achievements that are reached at world level and in Cuba they take place in the field of the engineering and they are supported in mathematics theories, without obviating the importance of the Technologies of the Information and the Communication (TIC) in this process. The technology progresses in a quick way, allows the application of mathematics concepts in the solution of engineering problems. It is said that the engineering is Mathematized at the present time.

It is considered that the Mathematics as discipline develops the reasoning, logical thought and it contributes with work methods for who studies it and it is able to find their practical application. As much the mathematics as the rest of the disciplines are of great importance in the engineer's professional formation in computer science.

The learning of the mathematics demand that the students develop generalizations by means of the recognition of analogies and differences. In this sense it becomes necessary to leave of an analysis of the term learning, which is characterized as a complex process due to the factors under which it is conditioned.

It is a process linked the man's existence like social being. Each human being was making himself the culture, starting from the learning processes that allow him the progressive domain of the reality and his consequent transformation, in correspondence with the satisfaction of the necessities.

In such a sense, it is required of a formation in mathematics for the engineers in computer science that allows him to give solution to the future problems of the profession. That is why, the present article exposes some reflections to achieve a teaching - learning process developer to the mathematics in the career Computer Engineering, taking as relating pedagogic investigations linked to this thematic one.

DEVELOPMENT

The learning was from its beginnings, for the man, the indispensable basement so that development processes, and these take place in turn, they were opening roads in new learnings. A person learned how to be man and to live in society, by means of uninterrupted processes of learnings and development.

When carrying out a retrospective of the learning and to focus it historically, contribute important if they meet with the considerations carried out by Plato, Aristotle and other philosophers from the Ancient Greece. In Plato's writings a first recognition appears to the importance of the dialogue like indispensable element in the reflection, and therefore, in the development of the critical and reflexive thought.

In Cuba, they stand out personalities that carried out significant contributions to the learning. Félix Varela Morales (1788 - 1853), considered as the first one in teaching to learn the Cubans, it introduced in his acts of teaching, the explanatory method and it put emphasis in teaching to his pupils, intellectual operations as the analysis, the synthesis and the induction. He faced the scholastic one, and therefore to the formalism and the dogmatism and it recommended how the professor should act to achieve his students to learn.

José Martí Pérez (1853 - 1895) stablished important arguments on how the teaching should be to produce lasting learnings in the students, and how the instruction and the education should be supplemented to achieve better preparation of the fellow, aspects that are reflected when it expresses that the instruction is not the same thing that the education. Of equal it forms, it contributed to the conception of the reflexive learning.

Starting from the decade of 90 in the last century and the first years of the current, several Cuban authors have stood out for their contribution to the development from the learning when pointing out the conceptual bases of the reflexive learning, besides contributing theoretical and practical elements about a learning that facilitates the development of the students. On the other hand González (1989), when analyzing the communication and their influence in the learning of the students, they contributed on the development of the personality.

For the followers of the cognitivism, the learning is conceived as prosecution of the information and it lapses during a series of stages. The cognitive structures are formed when the fellow learns organizing the knowledge in a certain way, what contributes to the formation of their own cognitive structures. If the learning is significant the fellow establishes relationships among the new knowledge and the cognitive structures that it possessed already, elaborating a new more complete and more integrative structure.

For the constructivists it has great meaning that the apprentice builds knowledge, and therefore, it enlarges his

cognitive structures starting from previous ideas that have that studied.

For the humanist ones, their attention is centered in the individual, its realization and internal development, and for the defenders and followers the Historical - Cultural Focus (EHC), this process has a more integral character, conditioned historically and in the one that interact in a very narrow way the social thing (interpsicological) and the individual thing (intrapsicological).

They constitute foundations of this investigation the main theoretical contributions of Vigotsky about the possibilities that has all subject of to learn and to be developed and the existent relationship among teaching - learning - develop, what demands that the professors implement learning strategies that facilitate the appropriation of the knowledge of the students starting from their personologic characteristic.

A category that is assumed like foundation of the strategy that is elaborated, is the concept of area of next development (ZDP) of Vigotsky (1988), defined by the author like: "the distance among the real level of development, determined by the capacity to solve a problem and the level of development of a certain potential independently through the resolution of a low problem the guide of an adult or a more capable partner".

From this perspective, the area of next development is the possibility that have the individuals of learning in a social atmosphere, in the interaction with the other ones, for what is socially certain. We learn with the help of the other ones in the environment of the social interaction.

In the measure in that the student passes from the dependence to the independence, the conditions are believed for new learnings, with the same dynamics. By the light of these conceptions it is considered that the group interaction favors that the student appropriates of the teaching content like main character of her own learning, without ignoring that each student should act with independence and the decisive role of the professor's appropriate in each activity type.

It is as well as, in the classes of mathematics talkative processes that respect will prevail and potentiate the individuality of the members of the group, for the sake of stimulating the position of new ideas, granting value to what each one of their members expresses.

In this sense, it is necessary to stand out that the exchange of information, the group reflections, the interaction among its members, favors each student's thought, it allows him to confront ideas, to complete them, to vary them and even to arrive to new positions. That is to say, the work of the group contributes to the development of each one of its members.

The collective work constitutes an impeller motor of each student's ZDP, so that starting from the development reached with the help of the other one a potential development it is achieved that allows to develop other activities of more complexity and at the same time, to manifest communication forms and deeper socialization.

However, the own EHC refers that the learning doesn't produce development in any circumstance, but alone in those that the student has reached a certain potential development. It means, because that the learning is not in itself developer, since it is necessary to organize it so that it is active, but in turn there is not mental activation without learning.

For Vigotsky to be developed is not to arrive to a certain point of the road, it is to arrive to a situation that sustains the development. You form strategic for the human development, as learning how to learn they are good according to this focus, because they complete this maintenance condition, of the person's permanency in the development.

From these postulates, the professor should work so that the learning develops qualities in the student's personality, that makes necessary to assimilate the conceptual and procedural content as part of the culture, in such way that can apply it to present new situations in the daily life, accompanied by feelings, attitudes and values so that a narrow relationship exists among thinking, feeling and acting.

In consequence, the professor's preparation in a didactics for the change is one of the remains for the development of productive methods. In such a sense, the author considers in his investigation that the professor should direct the process in a such way that drives to the education of the personality of his students, in function of a learning that contemplates as much the cognitive as the affective thing, in those that uses methods that facilitate to carry out reflections on the content and to find relationship with others.

To itself, Álvarez of Zayas (1985) carried out taxes about the teaching-learning process in the superior education. On the other hand, Silvestre & Zilberstein (2002), meditate about the characteristics of a teaching-learning process that, at the same time that it instructs, it educates, allow the student's development, as well as the relationship between the learning and the educational task and between the process and the intelligence.

The developer teaching should center its attention in the direction on the part of the professor of the practical, cognitive activity and the students' valorative, keeping in mind the development level reached by the students and its potentialities. The professor is the responsible for the teaching, he participates from his knowledge in the enrichment of the knowledge, feelings, attitudes and his students' values.

Castellanos, etal (2002), characterize from a developer perspective that the direction of the learning implies that the educators can assume the responsibility in this process from a creative position that allows them to plan and to organize the teaching – learning situation, to guide and to support the activity of the students and to evaluate in a systematic way the whole process taking as relating and focus of the intentional and strategic action the axes on which the learnings developers of our students are structured.

The Cuban investigators Castellanos (1999); Silvestre & Zilberstein (2002); Vine (2002); Addine (2004); Castellanos, etal. (2002); and Cheek (2018), study the teaching-learning process in a developer way.

For Castellanos, etal. (2002), it is defined to the developer teaching-learning process like that: "it will be characterized equally to emphasize in the necessary balance between the unit and the diversity, by means of the presence of general elements (regularities), valid for the different manifestations and levels of the process (chord with their essence), and their expression in form that they can be applied or not only developed in diverse contexts, but also in function to the natural diversity, psicosocial, socioeconomic and cultural of main characters of the process (chord to the recognition of the individual character of the processes of the learning)".

In this definition it is shown the necessity that exists of achieving a balance between the unit and the diversity to be able to reach a teaching-learning process that allows the student to be able to acquire knowledge that prepares him for a lifetime, in interaction with the rest of the members of the process.

According to Addine (2004), the developer teaching-learning process is that constitutes a system where as much the teaching as the learning, as subsystems, they are based on a developer education, what implies a communication and intentional activity whose to work didactic generates strategies of learnings for the development of an integral personality and selfdetermination of the education, in the marks of the school like social institution transmitter of the culture".

According to the author before mentioned, two elements that should be present to achieve a developer teaching-learning process is the communication and the intentional activities. In this respect, the investigator considers that the same ones are since of supreme importance they favor the work with the diversity and it foments each student's individual development, but it lacks elements like the methods that should be carried out to develop this process.

In this investigation attention is paid to the definition that offer Silvestre & Zilberstein (2002), have more than enough process of teaching learning in a developer way, where they refers that this process is that constitutes (the help of the other one, of the class partners, of the professor, of the family, as well as of other members of the community), for the appropriation of knowledge, abilities, habits, relationship norms, of behavior and values, bequeathed by the humanity that are expressed in the teaching content, in narrow bond with the rest of the educational activities and extrateaching ones that the students carry out and that it propitiates the development of the thought, the jump in hairspring from a development reached until one potential".

It is considered that for the practical ends of the educational process and the educational of the Computer Engineer, it is not allowed to see the way in that said process can be implemented, as long as they don't offer dimensions to attack in the practice a teaching-learning process of such characteristics.

On the other hand, Vine (2002), contributes with another definition of the developer teaching-learning process, considering that it is a specialized and systematized process of professional education of the personality that has in their center to the fellow that gets ready to exercise it in a specific context of professional performance, for what has particularities that distinguish it of other teaching – learning process".

In a general way, the authors that focus this process from a developer conception, recognize it as a system that identifies their structural components and also the relationships that settle down between them and the own process as an everything. They highlight the students in the first place, to the group and the professor, in their protagonistic list and their other components: objective, content, method, means, organization forms and evaluation. The problem is considered as a significant element that expressed, in fact, the dialectical character of the teaching-learning process.

In this investigation special attention is paid, also, to the knowledge of the components of the teaching-learning

process and, mainly, to take in the consideration the foundation that justifies the importance of to conceive and to put in function of the practice, the interrelation among this components, in order to elevate at levels qualitatively superiors the results in the direction of the reference process.

Considering the objective, the one which expressed the intention that must be reached in the teaching-learning process and in such a sense it assumes a rector character in the address of that process, the remaining components, dialectically integrated to each other and in correspondence with the premeditation declared starting from the objective component, they propitiate the successes to reach in the quality of the results for those that one works. It ratifies in the author's approach about the necessity of the planning of the work to undertake on the part of professors and students in the acting that takes place during the teaching-learning process.

The objectives constitute the orientation to the professor of what to achieve with the students, so much as for the level of knowledge, developer and educational demands.

Among those components, the content responds to what a question it is, what the student will learn, what aspects they will be assisted for her formation and what demands they will be kept in mind to stimulate their development. The content will embrace demands for the instruction, the education and development. They are component of the content: the notions, the concepts, laws, theories of the science in question the general, specific abilities and for the educational work, the methods of the science and the values to form in the man.

It corresponds to take in consideration, after having made reference to the relationship objective - content, the analysis of the importance of not losing of view the meaning of the relationship that settles down between the methods and the procedures.

Diversity of methods and didactic procedures whose starting point or origin differ exists. The selection of methods and procedures will be in dependence of the objectives to achieve and the characteristics of the content.

It is necessary to highlight that the procedures facilitate the application of the methods and they sum up the actions and operations to carry out for the students, in correspondence with the demands of the objectives and the characteristics of the contents. For example: to observe and to describe, search of the characteristics, elaborate questions, carry out suppositions, these are examples of procedures.

In correspondence with the aspirations outlined in the objectives, the characteristics of the content, of the methods and procedures, the teaching means, the evaluation and the forms of organization of the teaching are selected. These last ones will be very related with the chosen procedures.

Special attention is paid to the appropriate employment of the teaching means, those that constitute a component that facilitates the learning, that is to say, the appropriation of the contents, although in a teaching-learning process non alone developer should be payee of the content, but besides procedural approaches of learning. In their selection it is necessary to keep in mind the systemic character and their relationship with the objectives, contents and methods so that we can stimulate the productive thought - creator in the independent search of the knowledge, the self-regulation, the establishment of significant relationships and the motivations for the learning.

In the investigation it is assumed that it is important to use, in the teaching-learning process, varied means, from the traditional board until the most advanced TIC, able to mobilize emotions and intellectual processes.

The evaluation like category of the teaching-learning process, will facilitate the valuation of the level of reached achievements, according to the proposed objectives, what includes the different components of the content that are summed up in the concepts, laws, theories, abilities, behavior norms, qualities that are expressed, attitudes that are manifested. The evaluation considers the different demand levels regarding the domain and use of the knowledge, in function of the objectives.

The reached results and the progress of the students are questions that will be valued regarding the integral and initial diagnosis, what will take place in the different moments of the course, for what the evaluation must be systematic and to complete all the pedagogic functions that are inherent.

The didactic demands to guarantee a teaching that instructs, educate and develop, they demand from the remodeling of the conception of the teaching-learning process.

One of the main changes, the professor's position, precise the inclusion in collective work ways in that the interaction student is propitiated - student and its protagonism. On the other hand, the didactic procedures elaborated for these ends include collective work forms that in general constitute important moments in their development.

At the present time, challenges that should characterize the learning, exist like they are to assume the quick technological development and the multiplication of the information and the innovations; to develop the creativity and to innovate; to stimulate the integral education; besides

developing responsibility and social commitment. The above-mentioned constitutes the challenge of passing of a traditional teaching - learning process to the teaching and the learning again type.

In the titled book To Learn and to Teach in the school, the authors when analyzing the meaning of the precise education that this constitutes a concrete complex and historical social process in which takes place the transmission and appropriation of the cultural inheritance accumulated by the human being. In this context, the learning represents the mechanism through which the fellow appropriates in the contents and the ways of the culture that are transmitted in the interaction of people.

It is considered as developer that process of teaching learning that propitiates and guarantee in the students, the active, reflexive appropriation and aware of that part of the culture accumulated by the humanity that is reflected in the contents that are included in this process to give execution to their objectives.

Starting from these elements, we think about the necessity that the class like organizational form of the superior education, possess an internal logic according to the objective, content that assumes the cognitive strategies and metacognitive characteristics of the learning of the mathematics and the use of productive methods in dialectical interrelation with the expositivos, in particular those that stimulate, guide and promote the learning that teach to learn how to learn mathematics.

The developer learning of the mathematics has been studied by authors like Llivina (1999); Silvestre (2000); Kings (2000), Jiménez (2005); García (2006); Ballester (2013); and Zamorano (2015). These authors coincide in that the mathematics constitute an activity of resolution of problematic situations of a certain nature, socially shared; these problematic situations can refer to the natural and social world, or they can be internal to the own mathematics; as answer or solution to these external problems or interns arise and they evolve the mathematics objects progressively (concepts, procedures, theories).

We face newspaper to diverse activities or problematic situations, in which the mathematics plays an important role for the solution of the same ones, we make and we use the mathematics, it doesn't care to be the activity from buying an article until designing a plane or maybe to take out bills for our expenses. The natural world is full with problematic situations where adding, to subtract, to measure and to carry out all type of mathematics operation is already a routine task.

The mathematics constitute a conceptual, logically organized and socially shared system; the logical organization of the concepts, theorems and properties also explain great number of the difficulties in the learning; a system cannot decrease to its isolated components, since the interrelations among the same ones are an essential part.

In this case the mathematics is seen like a group of signs, theorems, axiom, advance and logically organized concepts. This organized group of universal character is understood by all the experts of this science in the one that everything appears related to each other in an exact way, it can understand each other the mathematics as this organized group that facilitates the solution of numerous problems that arise in the human activity.

To achieve a mathematics thought it becomes necessary the following thing:

"To interpret data of the daily life and to make decisions in function of that interpretation.

"To use the mathematics in a practice form from simple supreme algorithmic until complex analysis (including statistical).

"To possess a flexible thought and repertoire of techniques to face situations and new problems.

"To possess a critical and analytic thought so much when reasoning as when considering reasonings of others.

"To look for solutions, not to memorize procedures.

"To explore patterns, not to memorize formulas.

"To formulate conjectures, not only to make exercises.

The above-mentioned outlines the necessity of structural the teaching-learning process of the mathematics in a such way that promotes learning, how to learn, where its center of it locates in the construction and reconstruction of learning strategies that facilitate the active, reflexive, significant and motivated appropriation from the content to the progressive traffic from the dependence to the independence and self-regulation on the part of the student; the unit of the affective thing and the valorative in the development of the personality stop a lifetime and the development of capacities to carry out the learning of the mathematics starting from the domain of abilities, strategies and the motivation to learn and how to learn.

Under these conditions, it becomes necessary to achieve a teaching-learning process of the mathematics that transforms the characteristics of the traditional learning:

"Directed to enable work force.

"Accumulates knowledge fundamentally about the reality in a mechanical way.

"The student becomes dependent of the professor for the learning and doesn't develop abilities to learn with relative autonomy.

"Limitations in the significant development of the fundamental processes of the thought.

"The student acquires an individual conception of the learning and doesn't develop study habits and cooperated work neither they learn in a collaborative way.

To give answer to this problems, they think about as demands to achieve a developer learning of the mathematics the following ones:

"To design a teaching-learning process of the mathematics with political - ideological character that of exit to the curricular strategies defined in the study plan to stimulate the sensibility before the social problems and the work with the values.

"To work with the values from the class, developing examples that show the characteristics of the Cuban social system and that they are linked to the professional's pattern.

"To determine the mathematics operations to meditate on the possible roads of solution of an exercise, what demands of analyzing analogies and relationships among that known and the new thing to know, to determine the means necessary and possible strategy to use.

"To achieve the socialization for the students of the obtained results, what brings is able to work in a correct way with the maternal language, the terms and mathematics symbols, to explain the reasoning process that is used and to emit approach on it, besides to compare and to base ideas.

"To value in an individual or collective way the execution of the objectives starting from the obtained results.

"To stimulate learning and how to learn mathematics by means of a balance among the actions of the teaching with those of the learning, offering orientations on how to study and how to learn, leaving of a diagnosis.

"To promote the participation of the students in an active, regulated, reflexive and valorative way.

"To evidence significant relationships in the learning process, relating how is the learning in the different contexts of mathematics learning (concepts, advance, procedures, to solve problems).

"To promote the construction, reconstruction and use of strategies of cognitive and metacognitive learning.

These actions should not be carried out in an isolated way. On the other hand they should be interrelated, achieving an unit among the cognitive, regulative, affective, valorative, significant and motivacional.

To achieve such demands, it becomes necessary to carry out a teaching-learning process of the mathematics, where they take into account as main characters of the learning developer the students, the group and the professors.

In this case it corresponds the students to interact with the means, to incorporate knowledge and experiences, to be an active fellow that builds knowledge and it reconstructs their learning, besides autoregulating their study activity.

The group is considered as an indispensable organism where it is conforms to the communication.

The professor should offer the orientation base and learning methods and inquiry, to stimulate the acceptance of challenges, to present problems and to stimulate his solution, to diagnose difficulties and potentialities in the learning of the students, besides to stimulate and to train the selfknowledge and the reflection.

Based on the understanding of the foundations of the EHC of Vigotsky and the didactic positions to pay to a developer teaching-learning process of the mathematics, is justified the necessity of a definition of learning developer of the mathematics that responds to the characteristics of this investigation and it defines it like a process that propitiates the execution of the objectives and it favors the assimilation of the mathematics contents, taking into consideration the activation, regulation, significance and motivation dimensions, that allows to promote in the students the integral development of its personality".

They are considered as fundamental elements that are part in this process: the student that carries out their own learning; the professor that works with the purpose of favoring the student's learning; and the content of the learning. Of here it is deduced that the basic unit of the analysis of the developer teaching-learning process will be the combined work and in articulate way that are able to carry out the student and the professor around the tasks.

A teaching-learning process of the mathematics with such characteristics, will facilitate that the fellow appropriates of the culture that reflect the contents in an active, reflexive and conscious way, being propitiated this way the development of the logical thought in connection with the socialization processes that are carried out in this process.

Castellanos, etal (2002), establish the following dimensions of the learning developer, those that are assumed in this investigation and contextualize in the career Computer

Engineering: Activation - Regulation, Significance of the Processes, Motivation to Learn. Their study allowed to contextualize its definitions to intern them of this investigation and to take its conceptions for the design of the elaborated strategy.

To achieve the student to learn from the perspective of the developer learning, the professor should keep in mind these dimensions described previously. They form a recurrent system, for what the learning can begin from anyone and starting from there to go to the other ones. The professor should determine the actions that he will implement during the teaching - learning process to achieve the objectives of this process that it includes the development of abilities like the analysis, the demonstrations, the arguments and interpretations of the answers, among others.

In the case of the activation - regulation, is important the creation of productive, creative learning atmospheres, metacognitive and cooperative that facilitates the students the opportunity and the necessity of participating actively in the elaboration of its own knowledge, of meditating about the processes that take to the domain of the same ones, of being known themselves and their partners, as well as to assume the address and the control of its own learning progressively.

In this sense, the student acquires special interest, the metacognition concept, which understands each other as the taking of conscience and the control of the intellectual activity and of the learning processes that will guarantee their expression like conscious activity and regulated in bigger or in smaller measure, according to their development degree.

In this respect, it is required the professor to worry not only because the student learns, but rather she also meditates on how he learns, meditate on his ways of learning and also regulate and direct consciously. It demands from the professor that makes all the necessary one so that the student assumes the control of the active, conscious and reflexive participation of his learnings. As well, their authors point out the dimension activation - regulation points, towards the education of apprentices that, more than to consume information, they can look for it and to produce it, to criticize it, to transform it, and to use it in a conscious way and to créate, to make decisions, to solve new problems and situations, and to establish it like base for the new and constant learnings.

On the other hand the significance, in the terms assumed by the author in the present investigation, is linked to the search of strategies of teaching-learning directed to facilitate the discovery of the essential bonds among the mathematics contents that memorize, what includes to convert the search of its personal sense for the understanding, the taking of conscience of its utility (singular and social) and it stops its active insert in the process of development of the personality.

In the case of the motivation to learn, it is considered important to take like foundation assuming different roads to favor the formation and the enrichment of the intrinsic motivations in the learning, taking advantage of the existent system of incentives and reasons that characterize the students, to contribute to the development of positive attitudes toward the study of a certain specialty.

In this conception of the learning, the student is the center of the process like a social entity, active, conscious, guided toward an objective, the main character and product of multiple social relationships with the professors and other students with those that he is related in his social life.

CONCLUSIONS

The carried out theoretical study allowed to systematize the methodological theoretical foundations that serve from base to the study of the didactic structuring of the class of the mathematics subject to promote learning, how to learn, it is sustained in the theoretical budgets of the developer focus of Cuban authors for the process of teaching-learning of the mathematics, in the didactic developer principles and in the theoretical budgets of the Methodology of the Mathematics about the logic didactic of the teaching-learning process and its structuring in the class.

The problem related with the learning developer requires a change in the teaching of the Mathematics, but mainly in the search of new strategies, those that are based from psychological and pedagogic conceptions that promote a learning for a lifetime.

The theoretical and methodological relating study of the main ones allowed to elaborate indications for the professors of the career Computer Engineering, necessary elements to take the transformations ahead in the university teaching. These will improve the teaching of the mathematics starting from the study of the same ones and of their application, so that an active learning of the students takes place under the direction of the professor.

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