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# Professional values: their concretion in the transformation of alternative conceptions of learning

## Valores profesionales: su concreción en la transformación de concepciones alternativas de aprendizaje

## Valores profissionais: sua concretização na transformação de concepções alternativas de aprendizagem

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**ABSTRACT**
The complexity of the process of formation of values in the initial formation of the professionals of the Education demands from a correct modulation of the process of teaching-learning of the different disciplines, given the formative vital space its systematic level and its potentialities to develop a process educational developer from the structuring of educational tasks that allow to reveal the significance of the content that memorizes and the transformation associated with alternative conceptions, specifically, to the system of subjective knowledge in the process. The proposal was based on the materialistic dialectical method as methodological scientific base and methods of such theoretical, empiric level as induction-deduction, documentary analysis, observation, pedagogic tests, and descriptive statistic, what allowed to analyze the study object, its causes, relationships and development tendencies. As objective of the present work, it intends to implement a system of educational tasks that contributes to the formation of values in the professionals of the Education that it is summed up in the transformation of alternative conceptions of learning. The design of educational tasks propitiated the transformation of alternative conceptions of learning and its consequent impact on the formation of professional values.

**Keywords:** alternative conceptions; educational task; value.

**RESUMEN**
La complejidad del proceso de formación de valores en la formación inicial de los profesionales de la Educación exige de una correcta modulación del Proceso de Enseñanza-Aprendizaje de las diferentes disciplinas, dado el espacio vital formativo, su nivel sistemático y sus potencialidades para desarrollar un

proceso docente desarrollador desde la estructuración de tareas docentes que permitan revelar la significación del contenido que memoriza y la transformación asociada de concepciones alternativas, específicamente, al sistema de conocimiento subjetivo en el proceso. La propuesta se basó en el método dialéctico-materialista como base científica metodológica y métodos del nivel teórico y empírico, tales como inducción-deducción, análisis documental, observación, prueba pedagógica y estadística descriptiva, lo que permitió analizar el objeto de estudio, sus causas, relaciones y tendencias de desarrollo. Como objetivo del presente trabajo se propone implementar un sistema de tareas docentes que contribuya a la formación de valores en los profesionales de la Educación, que se concreta en la transformación de concepciones alternativas de aprendizaje. El diseño de tareas docentes propició la transformación de concepciones alternativas de aprendizaje y su consecuente impacto en la formación de valores profesionales.

**Palabras clave:** concepciones alternativas; tarea docente; valores.

**RESUMO**
A complexidade do processo de formação de valores na formação inicial dos profissionais da Educação exige uma modulação correta do Processo de Ensino-Aprendizagem das diferentes disciplinas, dado o espaço vital formativo, seu nível de sistematização e suas potencialidades desenvolver um professor desenvolvedor de processos a partir da estruturação de tarefas de ensino que permitam revelar o significado do conteúdo que se memoriza e a transformação associada de concepções alternativas, especificamente, ao sistema de conhecimento subjetivo no processo. A proposta baseou-se no método dialético-materialista como base científica metodológica e em métodos de nível teórico e empírico, tais como indução-dedução, análise documental, observação, prova pedagógica e estatística descritiva, que permitiu analisar o objeto de estudo, suas causas., relacionamentos e tendências de desenvolvimento. Como objetivo deste trabalho, propõe-se implementar um sistema de tarefas docentes que contribua para a formação de valores nos profissionais da Educação, o que se especifica na transformação de concepções alternativas de aprendizagem. A concepção de tarefas de ensino levou à transformação de concepções alternativas de aprendizagem e seu consequente impacto na formação de valores profissionais.

**Palavras-chave:** concepções alternativas; tarefa de ensino; valores.

## INTRODUCTION

The need to form a new man, attached to strong ethical and moral values that allow to transform society in which he lives, has been one of the main glances of contemporary pedagogy, so the formation of values and reveals as essential edge of future professionals in Education.

Authors of topics related to the Teaching-Learning Process have developed different approaches: "the contents are taught and learned with meaning for life, that students apply the basic concepts to solve everyday problems in a responsible way" (Basulto, Gómez and González, 2017, p.72); "Need to direct it so that the formation of the personality

of the student, developing logical thought and domain of the content object of study is enhanced " (Echemendía, Arza, Borroto, 2018, p. 50); "The protagonists of the teaching-learning process, individually and collectively appropriate social content through activity and communication,
which constitute teaching and extra-teaching conditions for the development of their personality as social beings" (Collazo, 2018, p.2).

It is assumed as a Teaching-Learning Process:

> … a successive series of teaching tasks in which the class, the topic and the subject are structures in more complex systems made up of teaching tasks and, in their internal dynamics, the teacher designs, plans, executes and controls the teaching tasks and the student is oriented to perform and execute them, self-regulating their actions based on the appropriation of knowledge and construction of meanings (Robaina and Banasco, 2017, p.3).

The Teaching- Learning, in the categorical system, it is the content; this in turn has within its dimensions that distinguish it, the value then, it will be a direct relationship between the Teaching Learning Process from different disciplines or subject s and the formation of values of future education professionals.

Associated with the formation of values there is the criterion of which "it aims to develop productive individuals that reflect values to society. This indicates that the world changes, society demands universities that help build social change by working together" (Calvopiña, Barba, Martínez and Guanoquiza, 2017, p. 223).

In relation to the above, "university students must receive a complete education, that is, academic training and moral education at home and at the university, in this way they develop an integral identity; values are the impulse of the human being" (Xicoténcatl and Hernández, 2020, p. 291); "Professional values are real qualities that are present in people and institutions, which can be shared by other subjects, but are not always interpreted in the same way, since each educational community prints its own meaning based on its history and culture" (Escámez, Pérez and Llopis, 2007; as cited by Quijada, 2019, p. 270).

Another reflection related to the subject refers that

> … the values are not as the result of an understanding, much less a passive information, nor attitudes conducted without significance for the subject. It is something more complex and multilateral since it deals with the relationship between objective reality and the components of the personality, which is expressed through conducts and behaviors, therefore, values can only be educated through knowledge, skills valuation, and reflection on practical activity with an assumed meaning. It is about achieving behaviors as a result of conscious and significant learning in the rational and

> emotional (Arana and Batista, 2020, p.3).

A synthesis of the expressed before allowed the authors define professional values as a set of socially positive meanings that are reflected in the consciousness of the subjects during the interaction with the object of the profession in the context of a historical reality social, they will determine their modes of performance.

Taking into account the previously discussed essences, and in accordance with Álvarez de Zayas' criteria associated with the laws of curricular design, the training of professionals in any of the branches of knowledge has to be a process focused on the formation of professional values, because it will determine future modes of action, since the value in its internal taxonomy refers to the harmonious interplay between practical knowledge-valuation and, and this practice, embodied in professional performance, which will allows to actively and consciously insert themselves in their respective work contexts as a direct consequence of the professional axiological scale constructed.

Professional values are a concrete expression of the meanings that are generated in the student, by actively appropriating the contents under study, and correspondingly, transformations in alternative conceptions of learning are manifested in them.

Associated with alternative conceptions, it expresses that "understanding them as mental representations of people about the natural world that differ from current scientific knowledge are "alternatives" precisely because they differ from scientific concepts" (Huerta, 2017, p. 1).

It is evident that in order to design an effective didactic intervention in science teaching, all the previous ideas that the student has about certain teaching content must be considered, even the distorted ones, since the future intervention of the teacher will focus on these deviations.

In particular, it states that "The alternative conceptions are important to the process of teaching and learning and to be taken as the basis for construction on of knowledge in the classroom" (Ortegon and Castiblanco, 2019, p. 348).

Related to the transformation of alternative conceptions of learning "there must be a change in the methods and forms of teaching, since over the years the traditional model based on solving exercises mechanically has been used, presentation of concepts without considering the part of conceptual reasoning. What constitutes the basis for the construction of scientific knowledge" (Saquinaula-Brito and Pánchez, 2019, p. 132).

The authors consider that, associated with the transformation of alternative learning conceptions, there are more contemporary perspectives that emphasize the method-medium- form triad as dynamizers of the Teaching-Learning Process and the incorporation of new information and communication technologies, teaching tutorials, modeling of natural phenomena on a laboratory scale, among others.

In correspondence with the above, the authors define alternative learning conceptions as the mental representations that are reconfigured in the act of learning, which causes the conceptual change of previous ideas distorted by the new significant

appropriations in the Teaching-Learning Process.

In an analysis integrated into what has been raised up to here, there is a common denominator that articulates the formation of professional values and the transformation of alternative conceptions of learning; namely, the role of the method, since it is the bearer of the affective component, both to reveal the significance of the content (value) and for the construction of knowledge from a scientific basis.

All the constructs discussed so far have a concentrated and integrated expression in the teaching task. As a cell of the didactically modeled process.

In this context, the teaching task must be conceived in a way that allows a significant appropriation of the content system, which has its concretion in the transformation of alternative conceptions of learning. It is important to highlight that the teaching task does not always contribute to a significant appropriation of the content under study, since sometimes teaching tasks are conceived that do not stimulate the active appropriation of the content by the student and, therefore, their level of development.

It is important that students appropriate the content through the activity that is generated by carrying out the teaching task, as part of the educational activity aimed at achieving a transformation in them. Authors who have dealt with the topic of the teaching task consider that

> … the teaching tasks constitute didactic resources that allow a transformative and creative practice of the student by playing a leading role in academic activities, which lead to enhance the solidity of knowledge and consequently to the development of an independent communicative attitude towards learning (Verdecia, Silva and Ferrer, 2010, p.3).

> … the learner perfects his mode of action and I elevates meanwhile, individually and in the group, specifying the actions and operations to be carried out by the student and the guiding and controlling role of the teacher (Martínez, Hernán dez and López, 2016, p. 286). It encourages the orientation of activities that involve the search and acquisition of knowledge and that leads to the development of skills and the formation of values (Martínez, Echeverría and Hernández, 2021, p. 33).

> … the orientation of teaching tasks promotes understanding and implementation of own attitudes of professional activity from the Teaching Learning Process.

In relation to the above, it is assumed that teaching tasks are "those activities that are oriented for the student to carry out in class or outside of it, involve the search and acquisition of knowledge, the development of skills and the comprehensive training of his personality" (Silvestre and Zilberstein, 2000, p. 34 ). These authors consider

that it represents the end of its design, implies the development of skills for the search for knowledge, which enables its execution and evaluation of it, facilitating the fulfillment of the objectives of the educational level.

Therefore, it is proposed to implement a system of teaching tasks that contributes to the formation of values in Education professionals, which is specified in the transformation of alternative conceptions of learning.

## MATERIALS AND METHODS

The general methodological conception of the research was based on the dialectical -materialist approach as a general guide for the whole process and as logic for the application of the particular methods of research at the empirical and theoretical level of knowledge. The use of the system of methods used in the exploratory study made it possible to identify the following limitations:

- In the oriented teaching tasks the concepts are treated without considering their reasoning.
- In teaching tasks, an educational proposal that makes explicit the formation of values is not taken into account.

The aforementioned limitations show the need for a new dynamic in the system of teaching tasks that contributes to the formation
of professional values of Education, whic h are specified in the transformation of alternative conceptions of learning.

The implementation of the teaching tasks system was carried out in the initial training of Education professionals. The structuring of the teaching task system encourages the formation of professional values that contribute to the transformation of alternative conceptions of learning.

A pre- experimental research was carried out in the Bachelor's degree in Education, Physics, at the University of Pinar del Río "Hermanos Saíz Montes de Oca", during the period from September 2019 to February 2020. The population consisted of 37 students and 11 teachers who share the contents of Physics, both in the initial training of the professional and in continuous training.

The induction-deduction method: it was used during the bibliographic review, to make logical reasoning about the development of professional values and their concretion in the transformation of alternative learning conceptions, which made it possible to establish partial and general conclusions.

The documentary review: allowed to know the treatment of the subject under analysis in the documents that govern the training process, such as the professional model, the results evidenced in the balance of the methodological work of the career, the efficiency indicators obtained the educational strategies and lesson plans for the subjects of the career study plan.

Observation: observation was applied to classes from
the guides made to ascertain the current status of the problem, from the exploration of reality of the process of teaching and learning.

Descriptive statistics and percentage analysis were used to process the information.

The pedagogical test was applied to diagnose the students and verify the pedagogical problem.

## RESULTS

The Cuban educational system has made important achievements in the treatment of physical content; however, weaknesses have been identified that limit the comprehensive training of students in the initial conception of Education profes sionals.

The use of theoretical and empirical methods made it possible to identify the weaknesses related to the object of study. For this it was found:

Limited didactic preparation of teachers, which does not promote their role.

The traditionalist approach is manifested in the treatment of physical contents, limiting the integral formation of students, with an emphasis on the formation of professional values.

In students there is a tendency to know only the facts, concepts and principles that characterize science.

Little development of skills in students to link content with life, which does not allow them to establish its significance and, therefore, its value.

The student is not the center of the process, so there is no emotion and creation of meaning in them.

The bibliography does not always explicitly recognize the application of the knowledge system in favor of the comprehensive preparation and performance of students in life.

In the documentary analysis of the Program and methodological orientations, it was possible to appreciate a tendency towards the treatment of the content, use of the different forms of organization of teaching, but it is not oriented how to develop the teaching tasks that contribute to the fulfillment of the purpose and objectives of the level to relate said contents with life.

It should be noted that the physical contents do not sufficiently address the application of the knowledge system to their contexts of action to promote a better understanding of them.

In 11 of the 15 classes sampled, the objectives lack an explicit approach to the formation of values, so they respond essentially to the instructive.

In 13 of the 15 classes observed it is limited conception of teaching tasks that require the student contextualizing those contained in the resolution of problems with professional focus.

In 3 of 5 answers in the applied pedagogical test, the students refer to the reproduction of the concepts and not to their application.

In 4 of the 5 answers in the applied pedagogical test, alternative conceptions persist associated with the kinematics of the translation.

The modes of professional action, the result of professional values, are not always intended as content elements to be addressed in the process.

From the above results, actions are proposed that allow an educational task design for the treatment of physical content, so that it achieves the formation of professional values and transformation of alternative conceptions of learning.

The actions proposed offer to the Physics professor to design teaching activities contextualized to the different themes of each of the subjects included in the disciplines.

The actions to be developed are:

1. Identification of the professional values to be formed, in correspondence with the academic year.

2. Updating of the characterization of students in the domain of the contents under study and their contextualization.

3. Design of teaching duties from the potentialities that provides basic physics course I.

4. Determination of the organizational forms of teaching and assessing learning.

Then the system of educational tasks is presented, exemplifying from the subject Basic Physics I in the theme Kinematics of the Translation.

**Teaching Task 1**

**Content:** characterization of uniform and rectilinear movement uniformly varied.

**Objective:** Identify the characteristics of uniform and uniformly varied rectilinear movements from the physical magnitudes that characterize it.

**Form of organization:** 1st class.

**Methodological suggestions** start theclass with questions of true/false or multiple options, in order to determine alternative concepts and creating a conflict in the mindset of the student; that they realize that they need to delve into an issue or concept that they apparently were clear about. Peer discussion is suggested.

It is recommended, then, that the chosen methods enable discussion, confrontation, argumentation, and the refutation of ideas handled during the development of the Teaching-Learning Process.

On the other hand, the predominantly advisable forms would be in favor of carrying out joint actions, cooperative actions, where social relations between the teachers of the subject- students of the career and between students- students reach their maximum expression.

1. Say if the proposition is always true: in a road, if two cars reach the same speed, then they should be next to each other. In either case, explain your reasoning.

a) Model a teaching task based on the characterization of rectilinear movements that allows the relationship with physical quantities: position, speed, acceleration and time, without using the mathematical expressions that characterize it.

b) Starting with the laboratory equipment, and with the help of the laboratory technician, model a uniform and uniformly varied rectilinear movement that allows the relationship of the physical magnitudes: position, velocity and acceleration for each rectilinear movement, without the need to use mathematical expressions. This can be specified in the school where you carry out the systematic work practice.

**Teaching Task 2**

**Content:** Interpretation of graphics of physical quantities position and time, describing n behavior bodies experiencing a rectilinear movement.

**Objective:** identify the type of rectilinear movement that a body experiences from the analysis of the

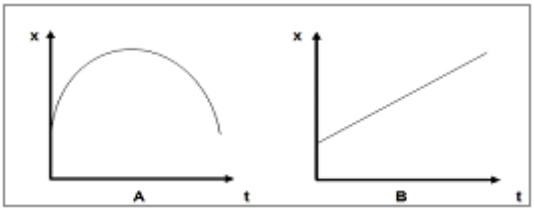
position - time dependence, which contributes to the transformation of alternative conceptions in the students, associated with the identification of the movement from the position of the graph in time function.

**Form of organization:** the class.

**Methodological suggestions:** Task 2 is very important after the students be able to identify the characteristics of uniform and rectilinear movement varied without the need for mathematical expressions. The procedure in this teaching task is aimed at students achieving a correct interpretation of graphs that characterize the relationship between physical magnitudes, position and time, for bodies that describe a rectilinear motion.

Very important collective discussion of the solution of the task that allows the transformation of alternative conceptions associated with the interpretation of graphs and classification of rectilinear movements.

2. from the graphs shown. Could you infer?



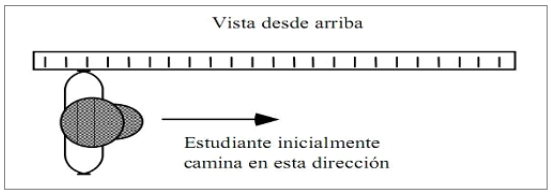

a) Identify the type of trajectory and movement experienced by the body in each graph. Argue.

b) Formulation and systematic solving exercises and problems of the textbook of Physics in 8th grade, associated with the interpretation of graphs for uniform linear movement and in tenth grade it also incorporates the Rectilinear Movement Evenly Varied.

c) Observe a class of new content and an exercise class given by the tutor in the subject Basic Physics I, associated with the interpretation of graphs as a function of time, in which you use the observation guide designed for systematic practice.

d) Model a teaching task that, from initial conditions without the use of mathematical expressions, can sketch graphs of position - time, velocity - time and acceleration -time dependence for uniform and uniformly varied rectilinear movements.

Example: a student walking side by side a graduated rule 2 m long. The student moves with decreasing speed toward the 2 m mark. After stopping momentarily near the 2 m mark it begins to move backwards to the initial 0 m mark, with increasing speed.




e) Incorporate similar tasks in physics subject for the tenth grade.

**Teaching Task 3**

**Topic:** kinematic of translation.

**Content:** quantitative termination speed bodies experiencing a uniformly varied rectilinear movement.

**Objective:** To determine in a quantitative way the physical magnitudes: position, velocity and acceleration for bodies that experience rectilinear movements.

**Methodological suggestions:** after of students achieve

the conceptualization and qualitative characterization of rectilinear movement uniformly varied, it is important then the solution of quantitative tasks.

It is essential to characterize the type of movement that bodies experience to determine the mathematical expressions to be used, which allow the calculation of physical quantities: position, velocity and acceleration.

3) Cliff Diving is an extreme sport. Jumpers of the world launch themselves from 27 meters without any protection, only their own concentration, skill and physical control. They all add pirouettes and twists to their freestyle jumps, before entering the water, just three seconds later.

a) Determine the value of the speed of these jumpers when entering the water (neglecting the action of the air).

b) From the results obtained:

What's advice students in the systematic labor practice on the risk of imitating these athletes?

What will you advise relatives and friends of the risk of imitating these athletes?

c) Investigate the events carried out in the last five years and, in particular, the Cuban performance.

d) Model contextualized teaching tasks that allow the quantitative determination of the physical magnitudes that characterize the Kinematics of Translation topic.

## DISCUSSION

The results obtained with the application of the methods applied on the subject affirm the need to deepen it, due to the importance of professional values in the integral formation of future professionals in Education from the treatment of the contents with a problematized perspective concretized from the task system.

Of the 11 teachers, nine show in the direction of the process the interaction between the didactic components and their relationship with the formation of professional values and the transformation of alternative conceptions of learning, considering the student the center of the teaching activity.

It confirms that, 33 of the 37 students expressed in their responses the application of the system of cone foundations and their experiences in their relationship with their future profession.

Without contradicting the above, "the process of teaching - learning fosters in students the love towards the profession, stimulates the ability to perceive and understand the beauty of the profession" (Echemendía *et al.,* 2018, p. 50).

This process is based on the activity to acquire knowledge in the training of future Education professionals, which will coincide with the author consulted to considering that in the direction of the Teaching Learning Process it should be consider the contextualization in the treatment of the contents and the formation of a scientific conception.

The criterion of authors does not contradict when they express that "in the formation d and values collaboration

between groups, individuals, communities and individuals looking to achieve true transformation of culture that supports improving the social fabric and work in favor of the collective and not of the individual (Calvopiña *et al.*, 2017, p. 223).

It is agreed that "integrating values into learning in an intentional and conscious way means not only thinking about content as knowledge and skills, but also about the relationship they have with values" (Arana and Batista, 2020, p. 5).

The proposal manifests the relationship between professional values and the transformation of alternative conceptions. It is considered that "the transformation of alternative conceptions coincide within groups of people (age, sociocultural context and similar educational level) are resistant to change and are coherent for the person who builds them from their own experiences" (Ortegon and Castiblanco, 2019, p.349) and that "the low conceptual level presented by manifests that in classes solving exercises is prioritized regardless of the theoretical reasoning, hence the importance of knowing the conceptions alternatives before imparting teaching" (Saquinaula-Brito and Pánchez, 2019, p.132).

Undoubtedly, the transformation of alternative conceptions and completeness of knowledge about the student and his training through the Teaching Learning Process of sciences, seeing this comprehensiveness in the formation of the same training in of values related not only to knowledge and performances, but also to moral standards and attitudes in correspondence with the times we are living.

The teaching task specifies in itself the knowledge system, the skills to operate with it and the values to be formed, the result of the meaning of the content for the student, which will be in correspondence
with their motivations. The authors coincide in that "it is taught and learned developing logical thinking contributing to the formation of ethical citizens" (Basulto *et al.,* 2017, p. 72).

In addition, the results of the investigation confirm that "the task teacher establishes the functions of the student in the process of Teaching Learning" (Robaina and Banasco, 2017, p.3.

It is agreed that the teaching task "encourages the orientation of activities that involve the search and acquisition of knowledge and that leads to the development of skills and the formation of values" (Martínez *et al.,* 2021, p. 33).

It is considered that the teaching task consists of the development of several actions related to the objectives that the student proposes to contribute to the solution of problems and express the result obtained. This allows contextualize the formation of professional values aimed at finding alternatives to the Directorate of the Process of Teaching Learning.

After the analyzes was carried out, the authors consider that the teaching task plays a primary role in the treatment of content, while values constitute a dimension of said teaching category. In the search for a solution the student develops actions that leads n understand what des known and its contextualization; all of the above for professional purposes.

The formation of values in future Education professionals is made viable from the Teaching-Learning Process of the different disciplines , considering the problematize teaching task as essential for the

establishment of the meaning of the content and the transformation of alternative conceptions in the learning.

The implementation of the system of problematize teaching tasks, from the set of actions for structuring, allowed to realize the transformation of alternative conceptions of learning and axiological training of the future Education professionals.

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**Conflict of interest:**

Authors declare not to have any conflicts of interest.

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