
***Estrategia pedagógica para la formación científico-
investigativa del estudiante de carreras pedagógicas***
***Pedagogic strategy to develop scientific research skills in
students of pedagogic majors***

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Resumen: Se presenta una estrategia pedagógica que permite organizar de forma lógico-metodológica la formación científico-investigativa del estudiante de carreras pedagógicas, la que se sometió a un estudio de caso contextualizado en los estudiantes de cuarto año de la carrera Pedagogía-Psicología de la Universidad de Guantánamo, cuyos resultados científicos aportan al perfeccionamiento del proceso de formación inicial del profesional de la educación desde una dimensión científico-investigativa que contribuye al desarrollo de sus aprendizajes para enfrentar de forma creativa los problemas profesionales.

Palabras clave: Formación científico-investigativa; Estrategia pedagógica; Cultura científico-investigativa; Situaciones de aprendizaje científico-investigativo; Proyectos

Abstract: This paper presents a pedagogical strategy to organize in a logical-methodological way the scientific-investigative training of the student of pedagogical majors, which was submitted to a contextualized case study in the fourth year students of the Pedagogy-Psychology major of the University of Guantánamo. The scientific results contribute to the improvement of the initial training process of the education professional from a scientific-research dimension that contributes to the development of their learning to face creatively the professional problems.

Keywords: Scientific-research training; Pedagogical strategy; Scientific-research culture; Scientific-research learning situations; Projects

Introduction

The constant improvement of the education of the professionals of the education constitutes a permanent task of the universities to guarantee its adequate scientific, investigative and labor preparation from the initial formation. This responds to the challenges of the growing and vertiginous development of science and technology in the context of the so-called knowledge society, where there is a continuous reference in multiple academic and

international scientific domains to the need that the student not only consciously learns theories, laws, concepts and fixed procedures, but discover new links and procedures, and come to the solution of different and increasingly complex problems.

What is proposed requires the scope of a solid preparation in the academic, the labor and, in a very special way, in the research fields, as a consequence of which the training models must offer options and increasingly integrate holistic alternatives to achieve high values and professional human beings sustained primarily in a deep domain of science and their profession.

Now, an education professional who investigates his reality and finds alternative solutions to the problems of his work does not triumphs by spontaneous occurrence, it is necessary to educate intellect with care from the first years of the major with the elements of the methodology of science and the knowledge that exists. Learning will depend largely on the acquired capacity to detect the contradictions and existing problems in their spheres of action, and their subsequent confrontation and solution revealing new knowledge.

Notwithstanding the varied and contributive incursions of important research referred to the subject of scientific and research training, which is found in the studies of many Cuban and foreign authors in the context of pedagogical careers among which González, Llivina and Fernández (2001, 2003, 2005); Castellanos (2001); García (2005, 2008, 2010, 2013); Salazar (2001); Chirino (2002, 2005); Dusu (2004); Caballero (2005); Valledor (2006); Addine (2006); Álvarez (2012), among others, as well as in the significant contributions on the conceptualization of scientific culture in the university education of Salazar (2007), Addine (2006), Quintero (2009) and Pino (2009), is that it is necessary achieve greater precision, contextualization and integrating vision of these categories in the university education of educators.

The result of the analysis of several sources, among them: the documentary review of the study plan and the brigade educational projects; exchanges with students and teachers; the participant observation in teaching activities and scientific-methodological workshops on the treatment of research in the initial training process, have made it possible to verify that the insufficiencies in the process of training the student of pedagogical careers limit the quality in the solution of the problems of the educational practice, for which the objective is

to develop a pedagogical strategy for the scientific-research training of the student of pedagogical majors.

Development

From its investigative function, the future teacher is committed to the identification of contradictions and the search for alternative solutions to the professional problems he faces, so that above all he must carry out research that enriches and elevates the quality of education by solving the difficulties practices that affect it. At no time does this mean that fundamental research cannot be carried out if it is motivated and prepared in that order, so it is necessary, from the first years of the major, to direct it towards the realization of critical analyzes on the epistemic foundations of educational research, generators of an attitude and motivation towards scientific research, in an organized and planned way, hence the need to strategically dimension the formative process in the formative time-space.

The research preparation in the process of training of the education professional has been addressed by Chirino Ramos (2002), as the expeditious way for the preparation of the future teacher in the fulfillment of the investigative function. García (2009) has systematized and deepened the research training from the initial and ongoing teacher training.

Salazar Fernández (2007) addresses the conceptions of scientific culture, scientific-research activity and scientific work. Pino (2009) considers the structural elements of this scientific culture. González (2015), studies the role of the main integrating discipline in the initial scientific-research training process and (2015) analyzes the management of the scientific-research training of the university teacher.

The preparation for the fulfillment of the investigative function requires the appropriation of the scientific method in the formative process. This function has as an essential content the identification and hierarchization of the problems that are impeding the training process, however, despite the positive effect that the development of the main integrative discipline of Labor Research Training has achieved, even the students show inefficiencies in the use of the tools to face the professional problems from a scientific-investigative perspective, so that it is prepared so that it can develop its investigative function from a reflective practice guided by the scientific method.

From the above we understand the need for the scientific-research training of the student of pedagogical careers, and it is conceived as a continuous and systemic process of a complex and interdisciplinary nature whose essential purpose is concrete in the appropriation of the system of knowledge, values, methods, approaches and techniques that enable the creative solution of professional problems for the transformation and improvement of educational practice.

As essential characteristics of the scientific-research training of the student of pedagogical majors, the following are revealed: it is a process of problematization and questioning of the educational reality, it allows to deepen in the essential peculiarities of the phenomena and educational processes from the different scientific theories -educational, implies an ethical positioning regarding the challenge of continuous and systematic improvement of the educational process, enables the education and development of research competence synthesized in the scientific-research culture, and has a strategic nature when considering the research projection as a process that transcends the formative time-space promoting the processes of educational change that allow raising the quality of education.

In order to achieve this scientific-investigative training, it is necessary to fulfill the following purposes: students' mastery of the scientific-pedagogical knowledge system, the development of scientific-research skills (Chirino et al, 2005), the development of students of the scientific method, the formation of values and qualities of a research teacher and the investigative approach applied to the design of the subjects of the curriculum from: the use of problem methods in the classes, the solution of problems of the educational practice, the professional approach of the content of the subjects, the investigative structuring of the teaching task.

In this way, the education of the scientific-research culture of the student of pedagogical majors is that process that, as a premise and as a result of the scientific-research training, develops an interdisciplinary and investigative scientific-pedagogical knowledge that, in unity with the convictions, attitudes, moral and character traits, ideals and aesthetic tastes, allows reflexive, critical, autonomous and creative action in the solution of professional problems on scientific grounds.

Functional structural conception of the pedagogical strategy for the scientific-research training of the student of pedagogical majors

The strategy consists of: general objective, premises for its application, stages and actions.

The general objective of the strategy is the logical-methodological organization of the scientific-research training of the student of pedagogical careers, in a way that allows the appropriation of the knowledge, skills and attitudes necessary to develop this process and form a scientific-research culture.

The premises are constituted in precisions that must be considered to guarantee the conditions of achievement of the strategy and the formative process that is organized with it. These are: the preparation of the teachers for the direction of the process of scientific-research training of the student of pedagogical careers, the systematization of the conception and the pedagogical strategy in diverse spaces of socialization, the educational didactic planning of the structural and organizational aspects of the process (descriptive letters, design of evaluation instruments, evaluation systems, etc.), and the socialization of the strategy with the students.

The strategy is structured in the following three stages:

Stage 1. Planning and design of actions for the scientific-research training of the student of pedagogical majors

This stage is directed towards the precision of the aspects that guarantee the initial course of the strategy from the methodological, material and personal point of view for the design and planning of the actions oriented to favor the scientific-research training of the student of pedagogical careers. In this sense, diagnosis and awareness-raising are developed, as well as the construction of scientific-investigative learning situations using the information provided by the various instruments, emphasizing the dynamic, participatory and interpretative nature of the process, while favoring the possibility of transformation of diagnosed reality.

Action. - Diagnosis and awareness

This action allows gathering all the necessary information in relation to the indicators of the scientific- research training of the student of pedagogical careers and their real possibilities to assume a transforming attitude of the educational practice and its problems in their different contexts. It should be considered as a premise that diagnosis is a communicative process, continuous and consistent. This makes it possible to understand and explain the behavior of students in the process of scientific-research training, as well as to assume a certain decision in relation to the transformation that they want to achieve. In addition, it must be borne in mind that the diagnosis is based on the interactions, dialogues and exchanges between the subjects involved the preparation of the group of teachers, and the need for a favorable co-participatory learning climate to encourage it to be greater and more accurate information.

So the purpose is to know the educational reality as a space and educational means, analyze the educational treatment that is given up to that moment and the participation of students and teachers in the solution of the professional problems of their reality, and what attitudes are manifested in their behavior and its implications.

This action should allow students to mobilize their resources and be oriented towards the reality in which they are developed, and the identification of the demands of the process of scientific-research training to acquire knowledge, values and attitudes, and to know the importance that this has for transform the educational reality.

Action 2. - Construction of scientific-investigative learning situations

The action is directed towards the formation of learning, formative and integrating situations. This implies the integration of the cognitive, affective and behavioral aspects that, as a procedure of the proposed training method, make up the scientific-research training.

For this integration the teacher must take into account the essential elements that define the internal logic of the scientific-investigative training of the student of pedagogical careers, and build learning situations considering the following aspects: specify the main educational problems with which one can face the student in his formative process; determine the attitudes that the student already possesses, the knowledge and the investigative values that

he / she estimates; analyze the knowledge, skills, values and / or fundamental qualities of the role of the educator that are stated in the curriculum to work with the students; analyze the contents of the different subjects in order to select those that enable direct integration with scientific research issues; determine the fundamental scientific-pedagogical concepts in each of the subjects; specify how the fundamental concepts are addressed in each of the subjects and the relationships established between them; be written in a clear and understandable language and be relevant to the group as well as controversial, by clearly revealing the contradiction generated by the debate and the teacher must consider the possible answers and positions that must be assumed and finish the approach of the conflict with a question that clearly presents the obligation and motivates to determine what to do, how and with what resources as well as the position that must be assumed.

This is an action that can also be considered as an opportunity for the student to exercise their autonomy to the extent that their initiatives and criteria and their relationship with the educational reality are taken into account. For this the teacher must make multiple proposals with an alternative character so that he chooses one and in this same measure he could get to elaborate others.

Stage 2- Execution of the student's scientific-research training

In this stage the process of scientific-investigative training of the student of pedagogical careers under the direction of the teacher is deployed. Its objective is to promote the development of scientific-research learning by the student through the approach of learning situations that make the practice viable from an active, critical and reflective participation on the basis of research as an activity and as a professional value that it has its reflection on attitudes to educational problems.

The teacher, by involving the student in the system of actions derived from the learning situation, promotes the appropriation of scientific-pedagogical and investigative knowledge and ethical-axiological aspects of professional behavior in a conscious manner. In this way the learning group develops an active and reflective participation with the guidance of the teacher as they act in a leading role, which acquires great value for their professional

performance from exercising and practicing it in the classroom as one of the main areas of scientific-investigative training conditioned and conditioning for their professional work.

Action 1. - Designing projects through the problematization and situations of scientific-investigative learning

The designing of the learning situations must be the result of a rich interaction between the teacher and the student, where the first one should guide the search, identification and formulation of professional problems or problems and contradictions that could appear before the use of bad or inadequate pedagogical practices. The situations of scientific-investigative learning from the problematization are generated from a heuristic and creative approach in the framework of the elaboration of the project.

Many small actions in educational practice can lead to great results and for this the student must be aware of their professional performance and impact. To develop the project, the following methodological procedures are suggested.

Approach and accuracy of the professional problem(s)

It refers to the need to specify the professional problems that are at the base of the scientific-research training of the student of pedagogical careers, valuing the relationship between the initial states, the future situation resulting from the practical research activity and the one to be achieved.

Accuracy of general and particular objectives

It is an essential step in the development of the project, requires certain methodological assumptions, such as:

- a) the objectives must be achievable, verifiable, clear and understandable and;
- b) the objectives must be concrete and contextualized, express an achievement or improvement of an educational situation.

The objective or goal that allows to see the project as a means for the scientific-research training of the student of pedagogical careers must be specified, and not as an end and refers to the more general result of the same, which achievement requires the total accomplishment of the tasks conceived. Another important issue is that referring to the

specific objectives expressed in partial results to meet the general objective and, finally, the direct results or products that are concrete, observable and allow achieving specific objectives expressed through the socio-educational change in training student professional in different contexts of action and participation spaces.

Accuracy of material and human resources

The precision for the accomplishment of the investigative tasks includes aspects of human character as the disposition to cooperate on the part of the university directors and of the educational units, and the technical-material resources required to carry out the tasks of the project.

Determining conditions

They are derived from the means- end relationship, that is, they link the material and human resources with the tasks and training objectives of the project. This allows identifying the possible achievements of the project and assessing the pertinence of the training tasks and the means used to carry them out. It is essential to consider that the best way to strengthen the scientific-research values in particular, and professionals in general, is to experience these values, that is, to match means and ends.

Determining training tasks

The investigative tasks to be carried out and the essential relationship between them must be specified, given by their character of synthesis inasmuch as they integrate the ethical, the axiological and the cognitive, in a general framework of creative construction that makes possible to conform behaviors typical of the pedagogical profession in the student.

Formulating development indicators

They allow demonstrating the achievement of the objectives or the degree of progress of the formative results. Unlike the conditions, the indicators show the extent to which the results are achieved, how the learning and basic values are built around a scientific-research culture. This allows the teacher to orientate in which aspects to evaluate during the accomplishment of the formative tasks of the project.

As indicators of scientific-research training and, consequently, of its development in the framework of the project, the following are proposed:

Appropriation of the particularities and essential foundations of the educational problem: it is the process of understanding the knowledge and values that condition the development and transformation of education for its expression in the interpretation of professional problems. This involves discovering objective causes and consequences of events, phenomena and processes, as well as interpreting the meaning and meaning of their learning for themselves and for others in order to increase their performance.

The appropriation of the problem is manifested in the extent to which the student is able to perform actions around the knowledge that is acquired in close connection with their thoughts and feelings from the perspective of the research, taking into account the complex nature and integrator of this process. As parameters to assess the relevance of this appropriation, the following are proposed:

- identify the main problems that arise in the educational practice and act from the projection for its solution,
- identify and explain with clear arguments the necessary aspects to evaluate the impact of the implementation of the actions.

Critical-evaluative reflection of the educational problem: it is the process of analysis and elaboration on the scientific-pedagogical research process itself that generates an active position in the student, which manifests as a cognitive and metacognitive resource in the formation of the critical thinking of that and from it comes to judge the usefulness, meaning and meaning for him have the resources used in their training, in order to assess and adapt their behavior; identify and make the educational problematic of their school and social community context a protagonist and integral way. It constitutes an awareness exercise; therefore, this reflection is the way for the formation of the investigative pedagogical conscience.

The critical-valorative reflection implies the discovery of the interdependence between the social and the formative, between the student as professional future of education and its action in the social context in a general sense, and the educational practice in the particular.

This reflection can be supported for its deployment in the following parameters: identify the main problems that affect the quality of education and work with the teachers and directors of the teaching unit based on their solution,

Issue criteria related to the quality of educational services in the context in which it is developed.

Construction of creative alternatives to the problem: it is the process of generalization of scientific-research knowledge that involves the selection, organization, updating and transformation of the information received by the student from different sources related to their previous knowledge in the face of new learning situations. This implies flexibility in the student's thinking to transform points of view, criteria, judgments, evaluations; organize their cognitive resources and modify their modes of professional action. As support parameters for this indicator, we suggest:

- to elaborate actions and tasks, within the project, aimed at solving the identified problems and,
- to solve pedagogical professional problems based on knowledge, skills and values, which allows them to perform efficiently and raise the quality of education.

Action 2. - Orientation towards the debate in the context of the project

The orientation towards the debate starts from the notion of problematization by means of which the teacher must structure the teaching-learning process of the professional contents, that is, the student is required to systematically interact with professional pedagogical problems and, what is more, , they themselves have scientific-professional problems in their area of action to solve them with their own efforts on the basis of a systematic critical analysis that favors exploration and critical reasoning. This analysis carried out within the formative process of the student will be aimed at clarifying:

- the understanding of the complexity and social character that are involved in educational processes;
- the socio-professional responsibility assumed by the educator as a researcher of the educational and social reality in which he works;

- the need to look for alternatives to train an education professional with a researcher's conscience that transcends the purely logical and experiential, and is expressed in his performance.

Although the situation posed is hypothetical, the teacher must mean the possibility that it can be real, therefore, has to relate it to a real possibility, in a present or future time. So that the student understands that today he is in an academic professional situation, but that in the future he can find in a position or place where he is, a similar situation and that he possesses a level of determination that allows him to solve an educational problem.

For the successful achievement of the purposes of this action the teacher must create a favorable climate where all the answers are valid through the exercise of listening, cooperation, tolerance, solidarity and dialogue in the situation of conflicts. In advance you should consider the possible responses and positive and negative effects to different positions.

Action 3. - Assessment of project effectiveness

Depending on this action, in the course of the activity, the student should be given feedback with the positive recognition of their contributions and actions within the framework of the project, recognizing their errors, which enhances their identity and self-esteem. To do so, it has to consider not only the cognitive aspects of pedagogical and investigative aspects but also the behavioral ones that reflect the attitude of the student, with others and with himself.

These elements give an account of the protagonism of that in his scientific-research training by integrating knowledge, feeling and doing into action, which enables him to find new meanings to his daily actions and a reinterpretation of the scientific-research culture in the social professional context. The teacher must specify what has been achieved with the development of the activity to encourage the student to advance their criteria and reconsider their performance to continue their development.

Finally, a consensus or a single answer may or may not be reached. In this case, what must be considered is the importance of the debate and the practice of listening carefully to arguments and reasons of the other in a climate of mutual respect and trust. The teacher, if necessary, bases or clarifies some criteria.

To evaluate the project, a global and integrative evaluation approach is proposed, with a separate and concomitant analysis of the context, input, and process and product evaluation.

Context assessment and needs assessment provides information for planning decisions, in order to determine the objectives of the project. Its purpose is to define the characteristics of the university institution, particularly the process of professional training and its real possibilities for the scientific-research training of the student of pedagogical careers and the teaching unit where it is formed, making a diagnosis of needs and precision of the objectives of the project as well as determining the general objectives of its evaluation.

The entrance evaluation allows determining how to use the available resources to meet the goals and objectives of the project. It provides information on the degree of preparation of the process and the teacher to assume the direction of the project and involves students in their development, the guidance resources available to the school, and the strategies that can be assumed to meet emerging needs. This type of evaluation tries to answer the question: can we do it?

The evaluation of the process provides information on the efficiency and effectiveness of the project. It allows identifying the degree of support of educational factors, the quality of interactions in the performance of tasks and actions, and the extent to which these factors are involved. What or how much are we doing, and how are we doing? Are the questions posed to respond with this type of evaluation? Its purpose is to provide information to determine if the project carried out can be accepted as it is, or it is necessary to correct some aspects that may not work?

The evaluation of the product provides information to make reuse decisions in order to accept, rectify or abandon the project, its purpose is to collect information to analyze if the specific objectives that had been proposed have been achieved or not, in order to make decisions to continue or modify those goals, objectives and tasks.

Stage 3 - Comprehensive evaluation of the strategy for the scientific-research training of the student of pedagogical majors

The evaluation of the strategy is based on the evaluation of the training approach and constitutes a methodological action of a procedural, systematic and participatory nature. Its

objective is to systematically assess to what extent the expectations regarding the project are being met, and the quality of the learning that emerged in the performance of the research tasks, verifying whether the objectives of the scientific-research training are being achieved.

This process gives an account of the functionality of the strategy, of the pertinence of the actions; reveals the investigative progress not only of the students but also of the professors and of those up to whom the influence of the project comes when reinforcing their awareness as a way for the development of professional and investigative responsibility, initiative, creativity and awareness of researchers

For the process of evaluating the strategy, three fundamental mechanisms are suggested: self-evaluation, multiple-evaluation and co-evaluation.

The evaluation criteria are directed to the analysis of the relationship between the results of the self-evaluations in contrast to the indicators of scientific-research training. The external evaluation seeks the correspondence of the expected results in the process and its indicators.

The proposed route is the interview with teachers and students in order to know their level of satisfaction in the development of the process. It also serves to observe the activities that are carried out, the behavior of the students in the university training context and in the teaching unit, in the relationship with others and with themselves. The latter is the main resource for multiple-evaluation.

To determine the relevance and effectiveness of the strategy, an intrinsic, descriptive and critical case study was carried out (Rodríguez et al., 1996), which allowed the integration of knowledge and action, as well as the systematization of ideas, feelings and actions that they highlight the contradictions inherent in the daily practice of the student of pedagogical careers. The study unit was made up of the fourth-year students of the Education major, specializing in Pedagogy-Psychology, from the University of Guantánamo.

The case study is structured as follows:

Pre-active phase: preparation of the actors from the training

Active phase: execution

Post-active phase: evaluation and interpretation of the results of the case study.

After the analysis made from the three indicators with their corresponding parameters declared in this strategy to evaluate the scientific-research training, it was possible to verify the following qualitative transformations in the students: the active and constructive understanding of the knowledge and values that they condition the development and transformation of education and allow the expression of them in the interpretation of professional problems; the mastery of the necessary categories for the creative solution of professional problems; the recognition of the need to solve professional pedagogical problems through the means of scientific research; the discovery of objective causes and consequences of events, phenomena and processes; interpret the meaning and meaning of their learning for themselves and for others in terms of raising their performance, and perform actions around the knowledge that is acquired in coherence with their thoughts and feelings from the perspective of research as a way to raise the quality of education, taking into account the complex and integrating nature of it and the flexibility to transform points of view, criteria, judgments, assessments, organize their cognitive resources and modify their modes of professional performance.

All this made it possible for the students of the sample to improve the quality of the scientific-research work developed, and to increase their interest in carrying out postgraduate studies at the end of their initial training that would allow them to continue their scientific-research training.

Conclusions

In general terms, the proposed strategy has premises that are made up of details that must be considered to guarantee the conditions of its success and the training process that is organized with it, and the stages that lead to the achievement of the stated objective.

Through the systematization of the strategy it was possible to favor the appropriation of the scientific-research culture in the student of pedagogical majors, favoring the coherent and homogeneous integration of scientific training and research training in the same process through the scientific investigative project.

The students managed to build scientific-research learning by mobilizing in an organized and socialized way the knowledge, skills and values learned in the different disciplines, to

solve professional problems on a scientific basis. In this way an alternative solution to the problem of research is offered.

Bibliographic references

- Colectivo de autores. (2004). *Profesionalidad y práctica pedagógica*. La Habana: Pueblo y Educación.
- Cruz, M. (2003). *Metodología para mejorar el nivel de formación de las habilidades profesionales que se requieren para un desempeño profesional competente en la especialidad Construcción Civil*. (Tesis de doctorado). Instituto Superior Pedagógico "José de la Luz y Caballero". Holguín.
- Cruz, S., y Fuentes, H. (2004). *La Didáctica de la investigación científica*. CEES "Manuel F. Gran". Universidad de Oriente. Santiago de Cuba: Material mimeografiado.
- Cruz, L. (2006). *Metodología para el desarrollo de habilidades científico investigativas en la formación de profesores universalizados*. (Tesis de maestría). Instituto Superior Pedagógico "Frank País García". Santiago de Cuba.
- Chirino, M. V., y Parra, I. (1999). *¿Cómo formar maestros investigadores?* Congreso pedagogía 99. La Habana. CD-ROOM con Materiales del Congreso.
- Chirino, M. V. (2005). *El trabajo científico como componente de la formación inicial de los profesionales de la Educación*. La Habana: Educación Cubana.
- Chirino, M. V. (2002). *Perfeccionamiento de la formación inicial investigativa de los profesionales de la educación*. (Tesis de doctorado). Instituto Superior Pedagógico "Enrique José Varona", La Habana.
- Chirino, M. V., et. al. (2008). *Diagnóstico de gestión de la actividad de Ciencia e Innovación tecnológica en Ciudad Escolar Libertad*. Informe de resultado científico. Instituto Superior Pedagógico Enrique José Varona. La Habana: Pueblo y Educación.
- Delgado, M. (2004). *Estrategia Didáctica para el establecimiento del Enfoque Investigativo Integrador en la asignatura Microbiología en los Institutos Superiores Pedagógicos*. (Tesis de doctorado). Instituto Superior Pedagógico "Enrique José Varona", La Habana.

- Dusú, R. (2004). *Estrategia didáctica para la formación científico-profesional del estudiante de la Licenciatura en Psicología de la Universidad de Oriente*. (Tesis de doctorado). Santiago de Cuba. Universidad de Oriente.
- Echavarría, G. (2015). *Gestión de la formación científico-investigativa del docente universitario*. (Tesis de doctorado). Santiago de Cuba. Universidad de Oriente.
- García, G. (2009). *La Formación Investigativa del Educador. Aportes e impacto*. (Tesis de doctorado). Universidad de La Habana.
- García, G., et. al. (2007). *Indicaciones para el trabajo científico estudiantil en las Universidades de Ciencias Pedagógicas*. (Soporte magnético). Recuperado de <http://www.monografías.com/trabajos64/>
- González, D. (2015, enero-marzo). Concepción actual de la formación científico-investigativa inicial del profesional de la Educación. *Infociencia*, 19 (1).
- Pino, L. (2009). La cultura científica y la investigación educativa. En *El trabajo de diploma: presentación oral y escrita*. La Habana: Pueblo y Educación.
- Salazar, D. (2001). *La formación interdisciplinaria del futuro profesor de Biología en la actividad científico investigativa*. (Tesis de doctorado). I.S.P. "Enrique José Varona", La Habana.
- Salazar, D. (2007). Cultura científica y formación interdisciplinaria de los profesores en la actividad científico-investigativa. En F. Addine. *Didáctica: teoría y práctica*. La Habana: Pueblo y Educación.
- Salazar, D. (2007a). Didáctica, interdisciplinarietà y trabajo científico en la formación del profesor. En F. Addine. *Didáctica: teoría y práctica*. La Habana: Pueblo y Educación.