

*Pertinencia y contextualización en la superación de  
profesores de Física*  
*Relevance and contextualization in the overcoming of  
Physics teachers*

Joaquín Elías Bello-Lorenzo; Hiram Ignacio Pérez-Rivero; Susana Caridad Rodríguez-Moll

Universidad de Guantánamo, Cuba

**Correo(s) Electrónico(s)**

[jbello@cug.co.cu](mailto:jbello@cug.co.cu)

[hiran@cug.co.cu](mailto:hiran@cug.co.cu)

[susana@cug.co.cu](mailto:susana@cug.co.cu)

**Recibido:** 22 de octubre de 2018

**Aceptado:** 26 de noviembre de 2019

## Resumen

La formación permanente desde la superación ha sido la invariante sostenida de la política educacional cubana en todos sus centros formadores de profesionales. Especial seguimiento se le brinda a tal política en las facultades pedagógicas de todas las universidades del país conscientes de la trascendencia que para la sostenibilidad del proceso revolucionario tienen los egresados de tales dependencias de la educación superior. El trabajo que se presenta pretende ofrecer un conjunto de acciones que pudiera iluminar una vía para ese necesario acercamiento a las necesidades reales de los profesores de Física que asisten a la superación que brinda el Departamento de Física de la Universidad de Guantánamo.

**Palabras clave:** Investigadores; Profesor de Física; Experiencias; Acciones metodológicas

## Abstract

The permanent formation from the overcoming has been the sustained invariant of the Cuban educational policy in all its professionals' training centers. Special follow-up is given to such policy in the pedagogical faculties of all the universities of the country aware of the importance that the graduates of higher education dependencies have for the sustainability of the revolutionary process

---

The work presented aims to offer a set of actions that could illuminate a way for that necessary approach to the real needs of physics teachers who attend the overcoming provided by the Department of Physics of the University of Guantánamo.

**Key words:** Researchers; Physic Teacher, Experiences; Methodological Actions

## **Introduction**

Following the wise words that one day were drawn in that illustrious and privileged brain of Albert Einstein: "If you want to obtain different results, do not always do the same", from the work presented a different way is illustrated in the way of conceiving the Overcoming programs to which the professionals who teach Physics in the Cuban school will be submitted, based on the scientific support provided by the research carried out by the authors, in the context of Guantánamo's people.

Adults learn differently than children and young people do. The programs that govern the improvement of teachers - adults - by a significant percentage, are permeated by paradigms that model the initial training of professionals, consequently moving away from the realities of the essential characteristics of learning of people in the stages that take place their lives. Adults learn from positions supported by Andrology and not from pedagogical budgets.

These androgynous elements that start from involving the participants in any activity in which it is intended to teach them will be approached very elementary in the work - they can be deepened in the master thesis of the main author (Lorenzo, 2002) and in the bibliography that is there offers - since the main attention will be paid to the concretion of these elements in the design of the set of actions aimed at achieving the contextualization and relevance of the improvement programs in any of the variants declared in the resolution of the Ministry of Higher Education that Standard, in Cuba, Postgraduate Education.

## **Development**

### **Proposal to proceed for the formation of professional improvement programs**

The actions have been grouped into what the authors wanted to call first and second phase. In the first; actions are grouped aimed at ensuring the effectiveness of the process to which the experiences of professionals who attend the improvement will be submitted, which in fact respond to the stages of

---

diagnosis and design of a curriculum; and in which, of course, the pedagogical model referred to above will govern, with the particularity that the experiences to be transformed will be those of the responsables for the stages of the curriculum design referred above.

On the other hand, in phase two, it will be able to find the actions that allow to specify the pedagogical model proposed to transform the experiences of the trainees, which because it contains the most complex stage of a curriculum (**application**) is where the author explains with special emphasis the main ideas implicit in the model.

The evaluation stage of the curricular design (program) conceived from the set of methodological actions that will be presented below and that are synthetically illustrated in the scheme that can be appreciated in the annex of the work, occurs, essentially, through the criteria which will be issued by the schools where the trainees come from, without forgetting the validation that is carried out during the face-to-face development of the course, as another element of the evaluation of the curriculum.

It should be noted that the actions conceived in both phases, in addition to facilitating an effective transformation that will bring the trainees in line with contemporary demands, will make it possible to energize and contextualize methodological work, both in schools and in the training center itself.

Ensuring congruence between what is done and what is needed.

### **First phase (effectiveness assurance)**

At the beginning of each school year, the person in charge of overcoming (taking advantage of the structure created in the department) will structure the development of an investigative process that involves Municipal Methodologists and members of the universalization team.

The central purpose of this inquiry will be to achieve, at the end of the school period, a precise characterization of the teachers who, from Mathematics and Physics, teach in Guantanamo schools.

In this first action, the experiences of those involved in the investigation will be based, which are those that allow them to issue possible hypotheses based on the purpose pursued and that will obviously be those that during the investigation process, will be subject to contemplation live.

With the results of the stated research, the person in charge of the area or responsible person will proceed in conjunction with the Provincial Commission of each subject in the area of Exact Sciences, to the rigorous selection of those who must be released from their functions, so that the next year they

---

attend the improvement offered by the Department of Mathematics - Physics of the Guantanamo University.

The final characterization and the updated problem bank - also derived from the research process - which among others, will have as its main source the process of teacher evaluation that is continually carried out to teachers in each territory; They will pay tribute to the main elements so that a large group of specialists and stakeholders (members of the research and a significant representation of those selected to overcome) under the guidance and direction of the person in charge of the area, work in the conformation of a general program proposal for the overcoming selected professors. Note how in these last two actions the stage of the model is specified, referring to the abstract, since with the data provided by the research, a program proposal is considered and conformed.

This proposal will be presented and defended by the main author of the same (appointed by the person in charge of the area of knowledge), first before an Integrated Council of Provincial Subjects Commissions (selection of members with greater category: scientific and academic) and then before the Scientist Council of the Faculty.

Este proceso de presentación permitirá realizar los primeros ajustes tendientes a garantizar efectividad del proceso pedagógico que se pretende desarrollar el venidero curso escolar.

The Integrated Council of Provincial Subjects Commissions (CICPA) will be chaired by the Dean and the respective Head of Education of the Provincial Directorate of Education (DPE).

Once the adjustments derived from these presentations have been made, which will become true and fruitful scientific discussions, the draft program thus outlined will be submitted for discussion and analysis with the trainees (previously selected professors) who will have, based on the tenure of the project, enough time to propose how many changes they estimate, so that it, both in form and content, really fits their learning peculiarities and professional needs, given their own shortcomings.

The phase will culminate with the presentation (by the person in charge of the area) of the finished project, before the members of the Board of Directors of the faculty for its final approval and implementation, thus fulfilling the last stage of the proposed pedagogical model.

This first phase will remain activated in response to the dynamics of the teaching-educational process that is currently being developed in the Basic Secondary Schools, which evidently, together with other

---

elements that could be provided by the continuous diagnosis, both through research and through the program itself will produce changes and in fact redesign the schedule.

### **Second phase (Executive)**

It is in this phase where the experiences accumulated by the trainees are submitted to process. It consists of two stages: one where there is a theoretical preparation that will allow the successful flow of the course and another that will foster the dynamic interaction of the trainee with his own reality. In details the following happens:

#### **First stage: (High School)**

One of our greatest pedagogues - Luz y Caballero - referring to the necessary scientific character of teaching said: "Find out what is known and teach accordingly." To find out you have to investigate. In this first stage of program execution, debates will be promoted that move to reflection on the need to investigate the process that is conducted with adolescents, as the true and objective way of seeking the effectiveness of the program and therefore, lead to the desired plans the quality of education.

The final and essential result will be the preparation of the trainees, of the necessary theoretical baggage that allows them to channel and execute small investigations around each of the topics that will be subject to treatment throughout the course, ensuring that at the end of the course, they have acquired the necessary research skills such as - from their own experiences - never to do without this powerful scientific procedure, which will undoubtedly increase the scientific production of the territory and in fact the quality of the education they develop.

#### **Second stage: (Operative)**

The development of this stage will make it possible to dynamize and contextualize the methodological work of the school and the pedagogical (faculty) through the personnel that is in progress. At the stage, the professional experiences of the trainees with extension to those in front of students (benefit of the research that the first will carry out) will be subjected to analysis in order to achieve the necessary transformations - become new knowledge - that when applied ( efficient knowledge, according to Dr. C. Guerrero Seide, 2001) will produce the necessary changes advocated by the Educational Revolution to which we are committed.

---

The process to which the experiences around the different programmed themes will be submitted, will essentially go through three moments where actions will be carried out in the following steps:

**Step N.1: (At School)****Actions:**

-Inquire their own procedure and that of the rest of their peers (center of origin) around a certain theme contained in the program that governs the actions of the course they are going through. This theme will be oriented in step 2.

-Prepare report of the previous action.-Check application - or take into account - of proposals arising in the analysis of the methodological activity carried out in step 3.

-Inform changes, orientations, indications, etc., at the last minute.

**Step N.2: (In University)****Actions:**

-Presentation and defense of reports of research results made during the first step.

-Presentation and analysis of proposals for methodological activities that demonstrate the transformations that have occurred, based on consistent professional actions and enriched by current requirements.

-Analysis of new orientations, indications, etc. (if there are any).

Discussion and approval of program redesign.

-Presentation of new topics of the course that will be submitted to research.

-Inform application - or take into account - of proposals arising after the analysis of methodological activities carried out in step 3.

**Step N.3: (At school)****Actions:**

- Execution of the methodological activities (in the department of the school) that resulted from the proposals presented, analyzed and elaborated during the second step.

-Analysis of results of application - or holding in mind - of methodological proposals made previously.

---

-Forming research design to perform during the first step.

The set of methodological actions explained above can be summarized in the scheme shown in the annex to the work. The arrows indicate the sequence of the actions grouped at different times in the design process.

Corresponding to one of the principles of postgraduate education (planning) will be assured, the author thinks, more effective if the time devoted to the executive phase of the program is distributed according to the following criteria:

To the first stage dedicate 20% of the total time of the course.

The remaining 80% of the time dedicated to the central purpose of the program, distributed in its three steps as follows:

**Step N.1 - 20%**

**Step N.2 - 40%**

**Step N.3 - 20%**

Note that in the previous distribution of time, obviously conceived for professionals released by a course, it is proposed that the stay in the university and the school of origin be shared at 50%, since in accordance with L. Cánovas (cited in 26 ); the purpose is: to know the reality, transform it and anticipate it, to what the authors add, from and in the reality from which it comes.

It is thought that with this distribution of time the model is completed (concretized in this section with a set of actions) - understood this, in coincidence with De Zuberia, Julián (1994 cited in 35), ... "as an ideal construction, to verify in practice, also considered a set of regulations to later derive particular actions ... "[35] - which together with the rest of the actions ensures that:

## **Conclusions**

The topics to be addressed in the professional development courses respond to the real needs of the trainees.

Transformations in knowledge occur through the trainee's own activity.

The program is conceived on solid scientific bases as part of a characterization product of research that lasts about a year observing, in situ, the reality in which future trainees develop.

---

The transformations of the professional procedure of the main protagonists of the teaching-educational process in schools, always start from the real experience of what has been done and is done up to that moment.

The professors of the University (leaders of the different activities of overcoming) promote in their teaching departments, efficient scientific debates that lead to the opening of research aimed at core problems of the teaching-learning process, developed in the most controversial subsystem of education Cuban, in the current moments.

When forming the overcoming courses every year, the effective validation of the previously developed programs is available.

The execution of the program is systematically pressed, allowing the procedure to guarantee success in the formation of the Basic Secondary School.

The trainees, in addition to having achieved the improvement of their professional actions, do not leave disoriented in terms of new changes, orientations, etc.; arisen during the stage of the course, which could become an obstacle for its effective reincorporation to the process, since within the set of actions some are designed to cause immediate redesign of the program, if these changes or new orientations arise.

As always, the authors are willing to dialogue and exchange, aware that it is here, where the key to the success of any human work is.

## **Bibliographic references**

Aguilera García, L. (2002). *La articulación universidad-sociedad*. (Tesis para tratar el cambio en las universidades. La Habana).

Bello Lorenzo, J. (2002). *Un programa para curso de superación profesional de docentes de las ciencias exactas que ejercen en las secundarias básicas de la provincia Guantánamo*. (Tesis Master en Investigación Educativa). ICCP, La Habana.

Bello Lorenzo, J. (1998). *Programa para la recalificación de los profesores de las ciencias exactas de las Secundarias Básicas de Guantánamo*. Guantánamo. ISPRGG. *s del modelo curricular cubano*.

Psicología Da Educacao. Especial. Brasil. Díaz Barriga, F. (1993). *Aproximaciones metodológicas al diseño curricular*. Hacia una propuesta integral. México.