



Original article

Professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center

Profesionalización de los docentes de ciencias y humanidades en el Centro Politécnico "Pedro Concepción Tamargo"

Profissionalização de professores de ciências e humanidades no Centro Politécnico "Pedro Concepción Tamargo"

Aimara Álvarez Cabreriza ¹



<http://orcid.org/0000-0002-4578-9311>

Armando Acosta Iglesias ²



<http://orcid.org/0000-0003-0395-5155>

Yanisledy Cruz Melgarejo ³



<http://orcid.org/0000-0001-6975-8707>

¹ Polytechnic Center of Agronomy "Pedro Concepción Tamargo", Cuba.



aimara.alvarezc@upr.edu.cu

² "Hermanos Saíz Montes de Oca" University of Pinar del Río, Cuba.



armando.acostai@upr.edu.cu

³ "Hermanos Saíz Montes de Oca" Mixed Center, Cuba.



yanisley.cruz@upr.edu.cu

Received: October 27, 2022

Accepted: January 26, 2023.

ABSTRACT

Currently, the process of professionalization of science and humanities teachers is considered one of the great challenges of Technical and Professional Education. This constitutes the basis for the solution of other problems posed to the polytechnic center, in its link with the social environment. A teacher is considered professionalized when he is able to carry out his functions and solve the professional problems inherent to his activity, in an innovative and creative way. It is determined as part of the integral elements of the organizational structure of the teaching department, the direction of the integral formation of the students; In this sense, it is necessary to implement actions in an integrated manner, which promote timely debate in the theoretical and methodological order. The objective of this work was to propose a system of methodological actions that contribute to the professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center, in the municipality of Consolación del Sur in the province of Pinar del Río. The research was carried out on a dialectical-materialist basis, in which theoretical and empirical methods were used such as: the historical-logical, the inductive-deductive, the analysis-synthesis, modeling, the system approach, the observation, the documentary analysis and the interview, which allowed a theoretical and practical study of the educational reality to arrive at this scientific result; This contributed to the preparation of teachers to face the professional problems

that the field of action of each specialty demands.

Keywords: polytechnic center; science and humanities teachers; vocational training; professionalization.

RESUMEN

En la actualidad, el proceso de profesionalización de los docentes de ciencias y humanidades es considerado como uno de los grandes retos de la Educación Técnica y Profesional. Este constituye la base para la solución de otras problemáticas planteadas al centro politécnico, en su vínculo con el entorno social. Se considera profesionalizado un docente cuando es capaz de desarrollar sus funciones y resolver los problemas profesionales inherentes a su actividad, de forma innovadora y creativa. Está determinado como parte de los elementos integrantes de la estructura organizativa del departamento docente, la dirección de la formación integral de los estudiantes; en este sentido, se hace necesario implementar acciones de manera integrada, que propicien el debate oportuno en el orden teórico y metodológico. Este trabajo tuvo como objetivo proponer un sistema de acciones metodológicas que contribuyan a la profesionalización de los docentes de ciencias y humanidades en el Centro Politécnico "Pedro Concepción Tamargo", del municipio de Consolación del Sur de la provincia de Pinar del Río. La investigación se realizó sobre una base dialéctico-materialista, en la cual se utilizaron métodos teóricos y empíricos tales como: el histórico-lógico, el inductivo-deductivo, el análisis-síntesis, la modelación, el enfoque de sistema, la observación, el análisis documental y la entrevista, que permitieron realizar un estudio teórico y práctico de la realidad educativa para arribar a este resultado científico; esto contribuyó a la preparación de los docentes para enfrentar los problemas profesionales que demanda el campo de acción de cada especialidad.

Palabras clave: centro politécnico; docentes de ciencias y humanidades; formación profesional; profesionalización.

RESUMO

Atualmente, o processo de profissionalização dos professores de ciências e humanidades é considerado um dos grandes desafios da Educação Técnica e Profissional. Esta constitui a base para a resolução de outros problemas colocados ao centro politécnico, na sua articulação com o meio social. Um professor é considerado profissionalizado quando é capaz de desempenhar as suas funções e resolver os problemas profissionais inerentes à sua atividade, de forma inovadora e criativa. É determinado como parte integrante da estrutura organizacional do departamento de ensino, a direção da formação integral dos alunos; Nesse sentido, é preciso implementar ações de forma integrada, que promovam o debate oportuno na ordem teórica e metodológica. O objetivo deste trabalho foi propor um sistema de ações metodológicas que contribuam para a profissionalização dos professores de ciências e humanidades no Centro Politécnico "Pedro Concepción Tamargo", no município de Consolação do Sul, na província de Pinar del Río. A pesquisa foi realizada em uma base dialéctico-materialista, na qual foram utilizados métodos teóricos e empíricos como: o histórico-lógico, o indutivo-dedutivo, a análise-síntese, a modelagem, a abordagem do sistema, a observação, a análise documental e a entrevista, que permitiu um estudo teórico e prático da realidade educacional para chegar a esse resultado científico; Isso contribuiu para a preparação dos professores para enfrentar os problemas profissionais que o campo de atuação de cada especialidade exige.

Palavras-chave: centro politécnico; professores de ciências e humanidades; formação profissional; profissionalização.

INTRODUCTION

In the present century, the social and economic changes experienced by the world have required modifications in the educational system.

Among the most significant consequences that scientific-technical progress has generated is the great amount of information in all areas of knowledge. However, it is not possible to provide the human being with all this information, as it advances so quickly that the first issue lies in the impossibility of retaining it without losing update.

Today, a teacher prepared to face this dizzying flow of knowledge and technologies is required; who is capable of designing, independently and innovatively, alternatives and ways to find new solutions to complex problems that emanate from nature, society and thought, in the educational field. It is essential then, to meditate on the professionalization of teachers, from the pressing need to educate for life.

This process still requires strong modifications in their conceptions. In many regions, problems persist that show the absence of a systemic, comprehensive and contextualized teacher professionalization model; Efforts are limited to offering training programs or courses, appreciating a reduced exchange to demonstrate knowledge, experiences and self-improvement, rarely based on scientific bases.

The process of professionalization of teachers is a problem of national and international relevance that has been studied by various researchers from different angles; Gato, Breijo and Rodríguez (2017) stand out; Morales, Socorro and Rojas (2017); Hernández, Jiménez and Padrón (2018); Martín and García (2018); Coteló, Riol and Romero (2018); Montero and Gewerc (2018); Baute, Iglesias, León and Pérez (2020) and Almogüea (2021); among others.

Technical and Vocational Education (ETP) does not escape facing these challenges, professionalization constituting an essential challenge; In this sense, it is necessary to understand the functions and roles that teachers must assume, both in the technical area and in general training, specifically those of Sciences and Humanities, in order to develop a successful pedagogical process committed to sustainable social development and sustainable.

The ETP as an educational subsystem is in charge of scientifically directing the permanent training of the mid-level skilled labor force, as well as the training of the population, through the integration of the polytechnic school-labor entity. This responds to the present and future need for the comprehensive training of workers and technicians that the country needs, for which it is required that the teachers who participate in the development of this process have a high level of professionalism, which allows them to undertake the different tasks. in the pedagogical order.

Such purposes are present in the polytechnic centers in Cuba, as a result of the materialization of the transformations carried out in the educational sector, particularly in the ETP from the substantive processes and work indicators of the Ministry of Education, specifically in relation to with sustainable development to raise the quality and rigor in the process of continuous training of teaching staff.

The polytechnic center is in charge of integrating the academic, the labor, the investigative and the extension, through the relationship with the labor entity, which entails in the teachers of Sciences and Humanities their updating in pedagogical knowledge and in those related to the technical specialties with which they work. Innovative work is requested from these teachers.

As has already been analyzed, scientific, technological and social development requires an urgent change in the conceptions of work developed by the aforementioned teachers in polytechnic centers, in such a way that they respond to the current demands of the world of work. The Science and Humanities teacher in the context of professional training must have a coherent mastery of the object of his science, but at the same level as the object of the profession, of the technical specialty with which he works at the Polytechnic Center.

Based on the above elements, an exploratory study was carried out at the "Pedro Concepción Tamargo" Polytechnic Center, with the application of an observation guide to activities, an interview guide for managers and a survey of teachers, which together with the The experience accumulated by the authors allowed us to recognize as a problematic situation that the teachers of Sciences and Humanities in the ETP manifest limitations for the development of the academic, labor, research and extension components in the "Pedro Concepción Tamargo" Polytechnic Center of Consolación del Sur. The work has the objective of proposing a system of methodological actions that contribute to the professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center, in the Consolación del Sur municipality of the Pinar del Río province.

MATERIALS AND METHODS

This research, of a descriptive type, was carried out in the departments of Sciences and Humanities of the "Pedro Concepción Tamargo" Polytechnic Center, in the period between September 2020 and September 2021. A population of 33 teachers who work with the specialties was used. from the ETP and 48 students from the Mechanization, Agronomy and Veterinary Zootechnics

specialties. The population is complemented by five directors (deputy directors and heads of departments) and six specialists from companies in the territory: Livestock Genetics "Camilo Cienfuegos" and the Comprehensive Tobacco Company.

The investigative process was carried out following the dialectical conception of the investigation, which has as its methodological basis the dialectical-materialist method and theoretical and empirical methods were used. The theoretical methods used were:

The historical-logical: it made possible the study of the theoretical-conceptual framework on the professionalization of science and humanities teachers, from different theoretical positions.

The inductive-deductive: it made possible the analysis of the subject, moving from the general to the particular and to the singular, determining the essential in the professionalization of science and humanities teachers.

The analysis-synthesis: it facilitated the identification, organization, planning and summary of the system of methodological actions for the professionalization of science and humanities teachers.

The modeling: it allowed to make the abstractions and generalizations that are manifested in the projection of the system of methodological actions.

The system approach: it was used in the integration of the results of the investigation, as well as in the establishment of the relationships of interdependence and subordination of the system of methodological actions.

In the empirical investigations the following were used:

Observation: teaching and productive activities were carried out to verify the current state of the professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center, in the Consolación del Sur municipality.

The documentary analysis: the study plans of the specialties were reviewed, as well as the work plans and reports of academic results, allowing to verify to what extent and how the professionalization of the teachers of sciences and humanities is developed in the Polytechnic Center "Pedro Concepción Tamargo", in the Consolación del Sur municipality.

The interview: allowed us to obtain valuable information from teachers and specialists about the process of professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center in the Consolación del Sur municipality.

RESULTS

This section presents the results obtained with the application of theoretical and empirical research methods. From the study carried out, the topicality of the problem was verified; It was also possible to verify, based on the diversity of criteria on the professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center, in the Consolación del Sur municipality, that this tends more and more to the need to integrate with the productive and services sector, as a requirement that society itself is demanding.

At least in the reviewed scientific literature, it was noticed that there are not enough

theoretical foundations that in the pedagogical, didactic and methodological order support the professionalization of teachers in the shared professional training polytechnic center-company, which led to the determination of a system of methodological actions that contribute to the development of this process in science and humanities teachers in the aforementioned institution.

It was derived from the analysis that the professionalization of teachers constitutes one of the essential pillars for training with the required quality of the qualified workforce in all sectors of society; in this case, with emphasis, in the "Pedro Concepción Tamargo" Polytechnic Center, from which the point of interest of this investigation emerged.

In the case of the empirical study, the observation was applied to 14 teaching and productive activities of the students. It was verified that the actions are undertaken without taking into account the integrated actions of the teachers of Sciences and Humanities, those of the technical department and the specialists of the company. It was also corroborated that not all the potentialities offered by the production and service entities for the teaching of science and humanities subjects are taken advantage of.

In the same way, it was appreciated that there is a gap between the treatment of professional problems of technical specialties and the contents of said subjects, not following the appropriate methods for their solution, nor the stages through which the training process must go with the purpose of competition for all teachers and companies.

On the other hand, from the documentary analysis, it was possible to verify that the methodological actions to contribute to the professionalization process of science and humanities teachers at the "Pedro

Concepción Tamargo" Polytechnic Center are insufficient, since their procedural nature is not recognized. and its peculiarities in professional training.

In the methodological work strategies of each of the departments, there was little systematicity and follow-up to the professionalization process of science and humanities teachers, so that they favor the professional, social and humanistic development of students.

Regarding the interview with teachers and specialists, the results of this instrument confirmed, based on the criteria of the majority of the interviewees, that the process of professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center was is being developed without following a systemic and integrating order of actions and operations that allow adequate preparation for the direction of the Technical and Professional Education Process in the specialties with which they work.

The preceding evaluations reveal the need for change in the perceived situation and, consequently, a system of methodological actions is proposed to contribute to the process of professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center.

System of methodological actions

Action 1. Determination of indicators for the diagnosis of the level of professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center.

Objective: to establish the indicators for the diagnosis of the level of professionalization that science and humanities teachers have at the "Pedro Concepción Tamargo" Polytechnic Center.

Indicators:

1. Mastery of the contents of the subject taught.
2. Mastery of the Study Plan and the Professional Model of technical specialties.
3. Level in which the academic, labor, scientific, investigative and extension components are integrated from the preparation of the subject.
4. State of interdisciplinarity with the technical area (work in relation to the professional problems of each specialty).
5. Frequency of carrying out activities of the subject in the labor entity.
6. State of improvement, from the workplace, depending on the professionalization.
7. Level at which the methodological work responds to the professionalization of teachers in the area of sciences and humanities.
8. Level of integration of the departments of sciences and humanities with the departments of the technical area of the polytechnic center.
9. Level of integration of science and humanities teachers with specialists from labor entities.

Action 2. Diagnosis of the current state of the professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center, in the Consolación del Sur municipality.

Objective: to evaluate the state of the professionalization of science and humanities teachers at the "Pedro Concepción Tamargo"

Polytechnic Center, for work with technical specialties.

In this sense, observations were made to the professional performance of teachers. The need for them to have preparation in the cultural field, responsibility in the exercise of their functions, solid scientific, pedagogical, technical and humanistic training that allows them to be reflective and creative in the training of the qualified workforce for their employment is highlighted. insertion in the labor world.

Based on the diagnosis of teachers' professionalization needs, they are placed in the following levels of pedagogical professionalization:

Basic: includes teachers in training and those who, even after graduation, do not show the necessary preparation. They will receive the essential knowledge and skills about the professionalization process in the ETP. As routes, self-improvement from the workplace and methodological work at different levels are recommended.

Updated basic: includes teachers who accumulate years of experience, have command of the subject they teach, but do not fully comply with the indicators established to assess the state of professionalization. In the same way, self-improvement continues to be the essential way to achieve it, as well as methodological work.

Deepening: it is designed for teachers who show adequate professionalism, but who must update their knowledge to be in tune with the development of the processes that are carried out continuously in the ETP; as well as for other teachers and managers who require it.

Action 3. Planning of the professionalization process of science and humanities teachers

at the "Pedro Concepción Tamargo" Polytechnic Center.

Objective: to project the process of professionalization of science and humanities teachers at the "Pedro Concepción Tamargo" Polytechnic Center.

It takes place in the following moments:

- Contextual and structural analysis of the environment.
- Information search.
- Design of the means and components of subsequent actions.
- Execution of professionalization activities.

Action 4. Analysis of the Study Plan and the Professional Model of each technical specialty with which teachers work.

Objective: master the constituent elements of each document, identifying the main professional problems to be solved, so that each subject contributes to solving them.

From the delivery of the normative documents to the teachers, the study activity is encouraged, which will be controlled and evaluated by the main teachers and heads of departments in the methodological meetings themselves and in other ways stipulated for this purpose.

Action 5. Visit to the labor entities of the territory.

Objective: to strengthen the integration with the companies of the territory based on the use of their potentialities for the development of the components: academic, labor, scientific, investigative and extension in the Polytechnic Center "Pedro Concepción Tamargo".

The main companies in the municipality that meet the conditions to join and develop the professionalization process are the following:

- Livestock Genetic Company "Camilo Cienfuegos". Located in the Corralito Farm. Horseshoe entrance. Consolation of the South Pinewood of the river.
- Comprehensive Tobacco Company. Located at 64th street, corner 50. Consolación del Sur. Pinewood of the river.

Action 6. Development of teaching activities in labor entities.

Objective: to give classes in which, from the analysis of the analytical program of the subject, its contents can be developed in the work context. Here, prior coordination with both parties must be taken into account, so that the entity's production or service process is not interfered with.

Example of a teaching activity to be taught in the labor entity

Specialty: 2nd year of the Veterinary Zootechnics specialty.

Subject: History of Cuba.

Theme: The Cuban labor movement in the 1920s.

Company: Livestock Genetics "Camilo Cienfuegos".

Methodological guidelines for its development

For the teaching of this subject in the aforementioned entity, prior coordination is carried out with the directors and specialists of the same, so that the productive process is not interfered with or the teaching calendar plan is altered. The company will be informed of the objectives pursued and the subject to be discussed, so that the specialists with the best preparation in this regard are selected, as well as other workers who accumulate years of experience in the

institution, and even retirees who have contributed to the results of this company.

The teacher of the polytechnic center directs the activity and promotes the exchange with the specialists and avant-garde workers, who will expose the students to their cultural heritage around the subject, highlighting the name that the entity bears, the elements of its historical tradition with reliable elements. arouse the interest of the students. All this is done on the basis of a previous study that they must have carried out. The duration time is adjusted to 90 minutes, culminating with an assessment of the activity carried out and orientation for the next class.

Action 7. Participation in the project of the exercises for completion of studies integrated into the labor entity.

Objective: integrate teachers of sciences and humanities to the projection of the exercises of completion of studies for each technical specialty.

It is important that the teachers of sciences and humanities of the "Pedro Concepción Tamargo" Polytechnic Center can develop the capacity to manage the academic, labor, scientific, investigative and extension processes, through the exchange of experiences and the systematization of all the actions carried out in the previous efforts. From these elements, the change in professional performance and its materialization in the results of educational teaching work can already be appreciated.

Action 8. Evaluation of the progress of the professionalization of teachers in the corresponding stage.

Objective: to verify the mastery that teachers have and the awareness acquired about the need for their professionalization from the object of sciences and humanities to the object of the profession, for work with the specialties of the polytechnic center.

This action is very important. It allows to conceive the evaluation as a process and as a result. The problems that arose in the teacher's actions will be evaluated and the pertinent corrections will be assumed.

It is opportune to disseminate the good pedagogical, didactic and management practices of teachers, in order to express the level of professionalization achieved.

DISCUSSION

The debates around the term professionalization of the teacher, in the different educations, unfold around divergent conceptions about the training of this professional and the exercise of his role, including the definition of its scope and limits, as well as its directionality.

Said definitions are re-elaborated and at the same time constitute matter for the project, execution and evaluation of the educational actions that are developed in the formation of the student body, in harmony with the current educational policies.

The approach to the problem concerning the professionalization of the teacher recognizes various ways for its treatment, given the complex nature that this concept under discussion entails. This section will point to the analysis of some theoretical assumptions about the concept of professionalization addressed by different researchers, and will specify the professionalization of science and humanities teachers, at the "Pedro Concepción Tamargo" Polytechnic Center of the Consolación del Sur municipality in Pinar del Río.

It seems opportune to start the study of this issue with the criteria of Morales, Socorro and Rojas (2017), who assert that the process of professionalization of teachers becomes a need that points towards the

quality of substantive processes and that, in the case of Scientific research allows the critical and reflective appropriation of knowledge, its creation and socialization based on the development of teaching activity and science. It is pointed out that in the case of this research, the academic, labor and extension aspects are also assumed, determining elements in the training of professionals under the system of influences of contemporary society.

For Imbernón (2017), making the configuration of a teacher real for a complex society like the one we live in today requires rethinking their professional development so that the ordering of a new culture of professional learning becomes real, giving rise to elements external and internal to the profession that empower and promote it.

Despite the guidelines that seek to define the teaching profile from static positions, other more transversal and diffuse elements, linked to "knowing how to be" and "knowing how to be", seem to make sense for a teaching task, which acquires characteristics of change and constant renewal (Harland, 2019 and Imbernón, 2017).

The analysis of teaching work becomes more complex when focusing on educational institutions, whose heterogeneous and contradictory nature obviously makes it difficult to establish an effective relationship between them and the labor entities that are assumed in this study as educational contexts as well.

In these contexts, the approach to the problem of professionalization must also examine issues related to working conditions, the dynamics, structure and needs of the educational institutions themselves.

This process demands from the teacher not only a high theoretical preparation in the disciplines and subjects he teaches; in the

same way, of Pedagogy, Didactics, Methodology and knowledge of the Study Plan and the Professional Model of the technical specialty in question, which allow them to update their teaching practice and make sound decisions about the changes that must be made. introduce into his performance as leader of the teaching-learning process in the ETP. These decisions should provoke the teacher's critical reflection on what he does in the classroom and in the workplace, what he teaches, how he teaches it and how students learn, and his way of evaluating.

At the present juncture, society expresses a series of challenges to teachers. Special interest, in this case, is associated with those from the sciences and humanities who work at the ETP. These are often not prepared to face them, due to the uninterrupted scientific-technological progress, which also causes a gap between the existing material base in the polytechnic center and the new technologies incorporated into the labor entity; without forgetting that the preparation of these teachers falls on the object of the science they teach and not on the object of the profession, of the technical specialty with which they work.

Martín and García (2018) consider that in order to assume the teaching task in all its complexity, acting in a reflective and rigorous way, initial training must attend to the main components of this knowledge, framing it in a competency-based training.

Given this, the answer must be sought in the continuous training of teaching staff, so that knowledge that they did not reach in their undergraduate studies are achieved in the postgraduate course and in self-improvement from the workplace. It implies providing the teacher with the necessary tools for their successful professional performance.

The issue of professionalization concerns both initial training and continuous improvement, but the considerations in this regard become relevant in the context of understanding the specific institutions, where pedagogical practices are deployed daily.

As a result of their studies, Riol, Morell and Armas (2019) value the teaching professionalism of the faculty and identify a group of challenges from the management of sociocultural projects, which are taken into account due to their relevance in this research.

According to Rivero, Carmenate and León (2019), the synthesis of the theoretical foundations assumed on the processes of professionalization and development of teaching competence, as well as the current situation in the educational institution, allows directing the objectives and actions to the academic improvement of the students. teachers.

In this sense, Baute, Iglesias, León and Pérez (2020) request a process of professionalization in the teacher that pays more attention to the active exchange between teachers-students-professionals of production and services, in order to transform the training process.

It agrees with these ideas, since this will allow raising the quality of the work carried out by the teachers of sciences and humanities of the polytechnic center and, therefore, the quality of the training of professionals in the different technical specialties. In the reviewed literature, various authors agree on the need for the process of teacher professionalization, which contributes to the achievement of quality polytechnic education, in line with the current challenges of ETP.

It is denoted that the concept of professionalization is replacing the terms improvement, updating and training, as part of teacher training and professional development; It is a continuous pedagogical process, conditioned by the needs of the current world of work and scientific-technical development, where skills related to improving the quality of education are systematized, which must respond to the very needs of science and education teachers. humanities; in this case, in the context of the fundamental activity they carry out, which is summarized in the training of the present and future qualified labor force that Cuban society demands for its development.

The study of the concept of professionalization in the training of teachers in the different education subsystems favors the improvement of their educational work and their professional pedagogical performance.

In short, it is necessary for teachers of sciences and humanities at the polytechnic center to perceive the changes in the actions that measure the effectiveness of their work. Beyond the necessary knowledge and skills to teach their science, an approach to technical sciences is required, to the understanding of the training of the qualified workforce in the integration of the polytechnic center (science and humanities subjects)-labor entity .

From this vision, it is essential to apply proposals that help teacher professionalization. His actions imply a wide range of external and internal elements that influence him, as has been seen: the merely academic (training), the external (socio-labor conditions) and the conceptions with which the profession and its learning are faced. .

The analysis of the theoretical and practical referents that support the professionalization

of the teachers of sciences and humanities of the Polytechnic Center "Pedro Concepción Tamargo" reaffirms the value that the authors attribute to the subject, given the demands of the professional problems that are presented to the present and future skilled labor force in the production and services demanded by society.

The scientific novelty of the proposed result was evidenced, given that the system of actions, which includes professional self-improvement and methodological work, allows enhancing the level of professionalization of science and humanities teachers at the polytechnic center.

The subject investigated is pertinent and current, since it responds to one of the pressing problems of the ETP: the professionalization of teachers in the area of sciences and humanities in relation to technical specialties.

REFERENCES

- Almoguea Fernández, M., Baute Álvarez, L. M., & Romero Jiménez, A. M. (2021). El contexto de actuación profesional y la extensión agraria en la formación continua del docente, especialidad agropecuaria. *Revista Universidad y Sociedad*, 13(3), 69-75. <https://rus.ucf.edu.cu/index.php/rus/article/view/2075>
- Baute Álvarez, L. M., Iglesias León, M., León González, J. L., & Pérez Maya, C. J. (2020). Profesionalización del docente universitario desde la solución de los problemas profesionales. *Revista Universidad y Sociedad*, 12(5), 178-182. <https://rus.ucf.edu.cu/index.php/rus/article/view/1697>
- Cotelo Armenteros, S., Riol Hernández, M., & Romero Viamonte, J. (2018). La

- profesionalización docente en género: Contribución al referente de género del profesorado universitario/Teacher professionalization in gender: the contribution to the gender reference of university teaching staff. *Educación y sociedad*, 16(1), 95-107. <https://revistas.unica.cu/index.php/edusoc/article/view/1028>
- Gato Armas, C. A., Breijo Worosz, T., Rodríguez Fuentes, S. (2017). La profesionalización para el desarrollo de modos de actuación profesional competentes en los profesores habilitados. *Pedagogía y Sociedad*, 20(50), 197-214. <https://revistas.uniss.edu.cu/index.php/pedagogia-y-sociedad/article/view/563>
- Harland, A. (2019). *Enseñanza universitaria; Una guía introductoria*. Ediciones Morata S.L. <https://edmorata.es/wp-content/uploads/2020/06/Porlan.Ensen%CC%83anzaUniversitaria.PR.pdf>
- Hernández Cruz, Y., Jiménez Sánchez, L., & Padrón Ramo, M. (2018). La profesionalización como principio en la Educación Técnica y Profesional. *Pedagogía Profesional*, 16(1). <http://revistas.ucpejv.edu.cu/index.php/rPPProf/article/view/114>
- Imbernón, F. (2017). *Ser docente en una sociedad compleja. La difícil tarea de enseñar*. Editorial Graó.
- Martín Romera, A., & García Martínez, I. (2018). Profesionalización del docente en la actualidad: Contribuciones al desarrollo profesional. *Profesorado: Revista de curriculum y formación del profesorado*, 22(1), 7-23. https://www.researchgate.net/publication/323532891_Profesionalizacion_del_docente_en_la_actualidad_Contribuciones_al_desarrollo_profesional
- Mesa, L., & Barujel, A. (2018). La profesión docente en la sociedad del conocimiento. Una mirada a través de la revisión de investigaciones de los últimos 10 años. *Revista de Educación a Distancia (RED)*, 18(56). <https://doi.org/10.6018/red/56/3>
- Morales Díaz, Y. de la C., Socorro Castro, A. R., & Rojas Valladares, A. L. (2017). La profesionalización del profesorado en el proceso de gestión de la investigación, en la universidad metropolitana del Ecuador. *Revista Universidad y Sociedad*, 9(4), 6-12. <https://rus.ucf.edu.cu/index.php/rus/article/view/655>
- Rivero Rodríguez, E. M., Carmenate Fuentes, L. P., León García, G. de los Á., Rivero Rodríguez, E. M., Carmenate Fuentes, L. P., & León García, G. de los Á. (2019). La profesionalización docente desde sus competencias esenciales. Experiencias y proyecciones del perfeccionamiento académico de la Universidad Técnica de Machala. *Conrado*, 15(67), 170-176. <https://conrado.ucf.edu.cu/index.php/conrado/article/view/941>
- Riol Hernández, M., Morell Alonso, D. y Armas Crespo, M. (2019). La profesionalización docente del claustro universitario: retos culturales desde la gestión de proyectos socioculturales. *Pedagogía y Sociedad*, 22(54),

169-193.

<https://conrado.ucf.edu.cu/index.php/conrado/article/download/270/269/>

Conflict of interests:

The authors declare not to have any interest conflicts.

Contribution of the authors:

The authors participated in the design and writing of the work, and analysis of the documents.

cite as

Álvarez Cabreriza, A., Acosta Iglesias, A., & Cruz Melgarejo, Y. (2023). Professionalization of science and humanities teachers at the Pedro Concepción Tamargo Polytechnic Center. *Mendive. Revista de Educación*, 21(2), e3236. Retrieved from <https://mendive.upr.edu.cu/index.php/MendiveUPR/article/view/3236>



This work is [licensed under a Creative Commons Attribution- NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).