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Original article

Preparation for the employment of the computer engineer, modeled from training management

La preparación para el empleo del ingeniero informático, modelado desde la gestión formativa

Preparação do engenheiro de computação para o emprego, com base no modelo de gerenciamento de treinamento

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ABSTRACT

The demands of the 4th Goal of the 2030 Agenda represent a challenge for Cuban universities, as scientific and social institutions responsible for fostering professional development processes, both initial and continuous, in line with the needs and interests of today's society. This article is the result of an investigative effort aimed at socializing the pedagogical model of formative management in the preparation for employment of computer engineers, to address the relationship between university and enterprise for professionals at the University of Oriente. The proposal used methods such as historical-logical, which allowed defining the historical background discussed by various authors regarding the continuous education process. The analysis-synthesis and documentary analysis, which accompanied the entire research process, helped establish connections and determine common and divergent points in the approaches studied. The systemic-structural method enabled the theoretical development of the pedagogical model, and the modeling allowed the structuring and relation of the model. Surveys and interviews were applied to explore opinions on employment preparation and diagnose aspects that require improvement. Based on the above, a pedagogical model for the formative management of employment preparation for computer engineers in the university-enterprise relationship is developed. The theoretical model is organized from the general theory of systems, which enhances the contribution of science to employment preparation. The proposal strengthens the relationship between university and enterprise and updates the knowledge of graduates, considering their weaknesses and interests from the employer's perspective.

Keywords: professional competencies, continuous education, professional training, formative management.

RESUMEN

Las demandas del 4to Objetivo de la Agenda 2030 representan un desafío para la Universidad Cubana, como institución científica y social encargada de fomentar los procesos de formación del profesional universitario, tanto inicial como continua, acorde con las necesidades e intereses de la sociedad actual. El artículo es resultado de una labor investigativa, cuyo objetivo es socializar el modelo pedagógico de la gestión formativa en la preparación para el empleo del ingeniero informático, a fin de dar respuesta a la relación universidad-empresa en los profesionales de la Universidad de Oriente. En la propuesta se emplearon métodos como el histórico-lógico, que permitió definir los antecedentes históricos en relación con el proceso de formación continua. El análisis-síntesis y análisis documental, permitieron establecer nexos y determinar puntos comunes y divergentes en los enfoques tratados. El método sistémico-estructural posibilitó la elaboración teórica del modelo pedagógico, y la modelación permitió la estructuración y relación del modelo. Se aplicaron encuestas y entrevistas para explorar opiniones sobre la preparación para el empleo y diagnosticar aspectos que requieren perfeccionamiento. A partir de lo expuesto, se construye un modelo pedagógico de la gestión formativa en la preparación para el empleo del ingeniero informático en la relación universidad-empresa. El modelo teórico se organiza desde la teoría general de sistemas, que favorece el aporte de la ciencia a la preparación para el empleo. La propuesta permite fortalecer la relación universidad-empresa y actualizar los conocimientos del egresado, teniendo en cuenta sus debilidades e intereses desde la entidad empleadora.

Palabras clave: competencias profesionales; formación continua; formación profesional; gestión formativa.

RESUMO

As exigências do 4º Objetivo da Agenda 2030 representam um desafio para a Universidade cubana, como instituição científica e social responsável por promover os processos de formação do profissional universitário, tanto inicial como contínua, de acordo com as necessidades e os interesses da sociedade atual. O artigo é o resultado de um trabalho de pesquisa, cujo objetivo é socializar o modelo pedagógico da gestão formativa na preparação para o emprego do engenheiro de computação, a fim de responder à relação universidade-indústria nos profissionais da Universidade de Oriente. A proposta utilizou métodos como o método histórico-lógico, que permitiu definir os antecedentes históricos em relação ao processo de formação contínua. A análise-síntese e a análise documental permitiram estabelecer vínculos e determinar pontos comuns e divergentes nas abordagens tratadas. O método sistêmico-estrutural possibilitou a elaboração teórica do modelo pedagógico, e a modelagem permitiu a estruturação e o relacionamento do modelo. Pesquisas e entrevistas foram usadas para explorar pontos de vista sobre a prontidão para o trabalho e para diagnosticar áreas de melhoria. Com base no exposto, foi construído um modelo pedagógico de gerenciamento de treinamento na preparação para o emprego do engenheiro de computação na relação universidade-indústria. O modelo teórico é organizado com base na teoria geral dos sistemas, que favorece a contribuição da ciência para a preparação para o emprego. A proposta permite fortalecer a relação universidade-empresa e atualizar os conhecimentos do graduado, levando em conta suas debilidades e interesses do ponto de vista da entidade empregadora.

Palavras-chave: competências profissionais; treinamento contínuo; formação profissional; gestão de treinamento.

INTRODUCTION

The university, as a historical institution, is responsible for the training of university professionals. Higher Education in Cuba, according to Horruitiner (2020), advocates a pedagogical model that encourages interaction between different fields of knowledge and professional practices. This translates into a curriculum that not only prepares students to face academic challenges, but also to perform with solvency and social responsibility once they are integrated into the country's labor and community structure.

The above supports the assumptions that arise from Objective 4 of the 2030 Agenda, which promotes lifelong learning opportunities for all. These aspects are integrated into the Educational Sciences with the purpose of achieving quality in the continuous training of university professionals, in the current Cuban context, as part of the transformations that are taking place from the updating of economic and social policies.

The continuing education of university professionals is approached from various angles. Aguirre et al. (2021) highlight it as the need to provide graduates with new updated knowledge and skills, and they attach importance to the training process that enhances the necessary skills in the workplace.

For their part, Aguiar and Baute (2024) reveal the need to make significant contributions from the continuous training process of university professors in university extension, giving importance to the relationship established between the university and the company to strengthen the training processes of professionals.

When investigating continuing education, it is positioned from the postgraduate level. Bernaza et al. (2020) highlight the need for constant updating of knowledge in professionals to respond to innovative, strategic and socially committed solutions. They address the need to take into account the different processes of science, technology and innovation, whose solutions transcend social well-being and development, hence their marked and necessary relevance.

On the other hand, Álvarez et al. (2021) refer to it in a close relationship between teaching and learning processes, supported by quality as a training component derived from educational policies that reinforce the preparation of professionals. These elements are shared and expanded in the continuity of this process, meaning the need for preparation for employment to promote the constant updating of their knowledge in recent graduates.

Thus, since the Labour Code, Law No. 116 stipulates the employer's commitment to ensure the necessary continuing training of recent graduates for their integration into the processes of organization, management and planning, as stated in the National Assembly of the People's Power of the Republic of Cuba, in Article 41.

In undergraduate education, the ongoing training process is intended to integrate its academic, work, research and extension processes, as conceived by various authors. Likewise, this is how postgraduate education is connoted, so that the stage that occupies the preparation for employment stands out as an essential component in the training of university professionals. Despite its relevance, it is not yet explored in depth in the scientific literature, although there is space for research.

It is therefore imperative to clarify the priorities of this stage, taking into account the demands of employers and the interaction between academia and business. Other factors require the consolidation of the relationship with the business sector, aligned with the needs of the current educational model. There is a limited development of the scientific approach in the professional field, which is essential to

strengthen the professional skills of the computer engineer.

Consequently, preparation for employment involves improving systemic interactions in the actions of computer engineering graduates. This is part of the economic and social role of these professionals, in harmony with the changes in the computerization of Cuban society, especially in the business sector, in response to the constant scientific and technological advances of the modern era.

These perspectives take into account the systemic, cultural and political-social nature of the continuous training process of university professionals and the coherence in the search for solutions to the problem of preparation for employment, which seeks responses and solutions to the development of professional skills, as well as to their training management as part of the graduate's performance in the context of the contemporary world.

It is the universities' task to direct preparation for employment as a process which, from the undergraduate level, articulates the link between academic, work, research and extension in students. The aim is to develop knowledge, research and communication skills within a professional architecture, with social commitment to the demands of contemporary society and scientific and technological advances.

Cuenca et al. (2021) highlight the importance of job preparation and the need for constant updating of recent graduates, to enable their successful performance in the various sectors of society. Another view is provided by Valdés et al. (2022), who claim that this preparation gives continuity to the development and improvement of specific professional modes of action, related to the recent graduate's job.

Ramos et al. (2023) refer to preparation for employment as a need to follow up on the difficulties of recent graduates in the university-business link and the need to update their knowledge at this stage. This topic is addressed by researchers such as Mengana and Guibo (2022), who conceive it as part of continuing education, but in an expanded way, to achieve specializations and the improvement of knowledge in graduates, in order to achieve objectives and skills, as a result of the exercise of their profession.

As a need to update knowledge, Suárez et al. (2022) consider it from the perspective of the recent graduate, mainly in those who are part of the teaching profession and in turn contribute to the computerization of society. The need to achieve in them the management of information and knowledge is an aspect to be taken into account in the training of the computer engineer.

Due to its current relevance, importance and significance, the issue of preparation for employment is an issue that must be resized, with the purpose of achieving in graduates their qualification, updating and deepening of professional skills in the face of the demands and requirements of the labor market, as part of the new trends in employability, in order to provide transformations in the context in which they operate in the face of the current challenges of globalization, scientific-technological changes and the need for science and innovation.

In view of the above, preparation for employment, due to its imprint and relevance in the university-business link, requires training management, in order to guide, diagnose, plan, organize, structure, assess and evaluate in the employing entities the transformations of graduates, as a result of the acquisition of their knowledge, so that they are capable of promoting changes in all economic-social aspects, responding in their workplace to creativity, responsibility, organizational and work skills.

Management is interpreted as the process of doing things in its purpose, which interrelates planning, organization, direction and control

aimed at achieving the objectives set. From a pedagogical perspective, references such as Naranjo (2020) are taken into account, who conditions this process taking into account the training needs in a socio-individual interaction that encourages guiding and activating professional performance.

Another criterion on formative management is offered by Valdéz et al. (2023), who define it as a process that includes continuous feedback, the use of methodological strategies and the implementation of appropriate instruments to improve students' knowledge. Likewise, Galarza (2021) considers it an educational process that involves students and teachers in the reorientation of teaching strategies based on learning needs.

In this context, the term "training management", as an action and effect of management, focuses on the preparation for employment that the computer engineer requires today, with the aim of updating knowledge, skills, values and competencies in the workplace, from an active-transformative training orientation. This requires an interconnection between instruction and education, conceived in a scientific and systemic way, by relating continuous training with the university-business link.

The arguments presented frame the objective of the article, aimed at socializing a pedagogical model of training management in the preparation for employment of computer engineers, in order to respond to the university-business relationship in professionals from the University of Oriente.

MATERIALS AND METHODS

In order to achieve the proposed objective, a qualitative research was carried out, in which theoretical methods such as the historical-logical method were used, which allowed defining the historical background addressed by other authors regarding the process of continuous training and preparation for employment, as well as the particularities of the behavior of these processes in the preparation for employment in the computer engineer.

The method of analysis and synthesis, which passes through the whole logic of the research process, in processing the documents provided that served for the diagnosis of the research, to characterize the continuing training process of the newly graduated.

The documentary analysis made it possible to compare references, establish links, determine common and divergent points in the approaches discussed on continuing education and preparation for employment, and obtain pertinent conclusions, by understanding the causes of the phenomenon under study and determining the descriptive elements that require intervention with the proposal of the pedagogical model of training management in the university-business relationship as a theoretical contribution.

Thus, modeling as a theoretical method allowed the structuring of the pedagogical model of training management in preparation for employment that dialectically relates component subsystems and resulting qualities given the upward movement of training management.

Meanwhile, the structural systemic method made it possible to develop a theoretical pedagogical model of training management in preparation for employment, based on the functions and actions declared in the subsystems, components and resulting qualities that typify the model.

To diagnose the professional training of the computer engineer, surveys and interviews were applied to a sample of 71 people, in the 2020-2021, 2021-2022, 2022-2023 courses as shown in table 1. These made it possible to explore opinions on the recent graduate's readiness for employment, in addition to diagnosing aspects

that needed to be improved, to enhance the development of skills, knowledge and competencies in the recent graduate in the work environment, taking into account current technological advances.

Thus, for this diagnosis, indicators such as:

- Level of knowledge and weaknesses that graduates have to solve problems in their specialty from their workplace.
- Degree of attention to training management in the needs of recent graduates in Computer Engineering.
- Level of depth in the link that the labor entity that receives the graduate has with the Computer Engineering degree.
- Level of relevance of the planning, organization and execution of training actions in preparation for employment.

The instruments were applied to a sample belonging to the regular daytime course, selected intentionally, in which the following were taken into account (Table 1):

- Teachers working in the final years of their degree.
- Career managers
- Tutors and managers of employers who receive the largest number of recent graduates.
- Recent graduates of computer engineering from the regular daytime course, located in the province of Santiago de Cuba.
- Students of the regular daytime course, in their final year of their degree before having defended their final year of studies.

Table 1- Composition of the population and the sample

Respondents and Interviewees			
Teachers and employers	**Population**	**Sample**	**Percent**
Graduates	34	26	74.47
Final year students	24	12	50
Teachers	20	11	55
Employers (tutors, trainers, HR manager)	35	22	62.85

RESULTS

The historical study reveals gaps in job preparation, which is also confirmed by the diagnosis carried out. This is confirmed by 16 of the 22 tutors interviewed (72.73%) from the employers, who point out inconsistencies in the knowledge, skills and abilities that graduates must attain to face the IT challenges in the workplace, which underlines the need to properly manage training in job preparation.

There is a limited preparation of graduates regarding the achievement of professional skills in key areas such as network administration in Linux, working with databases, programming and professional responsibilities from the undergraduate level, which makes it difficult for them to effectively enter the business sector. On the other hand, 10 of the 26 graduates (38.46%) report that tutors from employers lack an effective methodology to manage training in preparation for employment.

In the survey, 100% of graduates (26) express the need to strengthen the relationship between the university and the employer to update the knowledge needed for the workplace, as well as to improve the connection between tutors on both sides, which would facilitate a better updating of knowledge from the work environment. However, 88.46% (23) of recent graduates feel that the university does not adequately serve them in their preparation for employment.

On the other hand, 66.67% (8) of the final year students express the need to improve the professional attention they receive from the employing entity during their work experience.

As for the methods used from the perspective of continuing education, theoretical, methodological and practical limitations are evident in preparing computer engineers for employment. This underlines the need to articulate training management in employers, in an interaction that considers social relevance, training orientation and professional projection to optimize the performance of graduates. This management is based on the General Systems Theory as a theoretical foundation, with the aim of strengthening the university-business relationship, considering the weaknesses observed in recent computer science graduates, as well as the current demands for their insertion into the workforce.

The pedagogical model structures the training management in the preparation for employment of the graduate of Computer Engineering, consolidating a superior quality through the interrelation of the subsystems. These subsystems include the identification and organization of the training process, and the execution and evaluation of competencies, with a multidirectional character that covers various academic functions related to teaching, learning, communicating and assessing. The training management is designed to specify the socio-professional competencies of the computer engineer.

The first component of the subsystem, social relevance, ensures that training management meets the expectations and needs of society, helping to better prepare graduates for the demands of the workplace. Through this component, graduates acquire analytical and creative thinking, which is essential for integrating computer resources into their professional performance.

The second component, training guidance, promotes training management as a pedagogical tool that facilitates the university-business relationship, guiding and organizing preparation for employment in a co-participatory manner between both actors. This includes the evaluation of difficulties, the diagnosis of needs and the stimulation of the graduate's interest.

The third component, professional training projection, presents training proposals based on the individual needs and interests of the employing entity, which strengthens the weaknesses diagnosed in the computer processes.

As a result of the dialectical interaction between these components, formative intentionality emerges as a quality resulting from the first subsystem. This quality allows the systematization of knowledge, consolidation of values and competencies necessary for the performance of the recent graduate in his/her workplace (Figure 1).

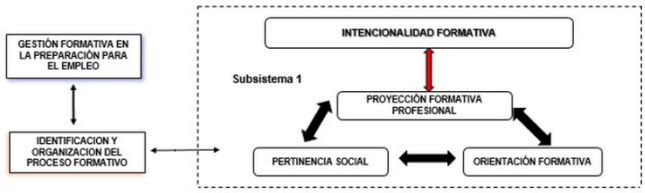

Fig. 1- Subsystem 1: Identification and organization of the training process

Understanding the synergy revealed between the first subsystem ensures entry to the second subsystem: Execution and evaluation of competencies. This establishes a dialectical relationship in an ascending and superior manner in the elements described with respect to the previous subsystem; which is reciprocally connected with the theoretical methodological aspects proposed in the previous subsystem. Its transformative expression emanates new components: Implementation and formative transformations, evaluation of performance in

context and assessment of professional competencies.

The component: Implementation and training transformations, is a gateway in this subsystem, where actions are implemented to achieve professional skills that are manifested in the know-how applied to the job, based on the intention of exploiting computer systems, software design, development of computer solutions to various problems in employing entities, as part of training management.

This component requires, from the preparation for employment, that the computer engineer is able to use the latest information technologies, for example in software programming, which responds to complex demands from the workplace, The training is a combination of practical skills, knowledge, motivation and values which are the result of the learning management instrumented throughout the modelling movement.

The establishment of new links ensures the performance evaluation component in context, which measures what is contextualized through indicators, based on training management as a process that channels the training orientation component in the actions of the career, trainers, tutors in the employing entity, who are part of the university-company relationship. The weaknesses detected are addressed as part of the transformative role of the competencies acquired by the graduate.

The above makes it possible to include the professional skills assessment component, which achieves an assessment of the professional skills acquired in preparation for employment, guaranteeing co-responsibility by the group comprised of the university and the employer.

This component reveals the impact of the model on the performance and transformation of the trainee, which is based on the training management model; which make it possible to assess the professional skills that lead to meaningful and effective learning in computer engineering; through experiences in specific learning and work situations as an expression of the acquired skills.

Result of this subsystem of the training management path, becomes a resulting quality comprehensive training of the graduate. It allows for pertinent training adjustments that sustainably guarantee the graduate's comprehensive training, which expresses the importance of the continuous training process of the computer engineer, in which the transformative capacity in work entities is synthesized as shown in figure 2.

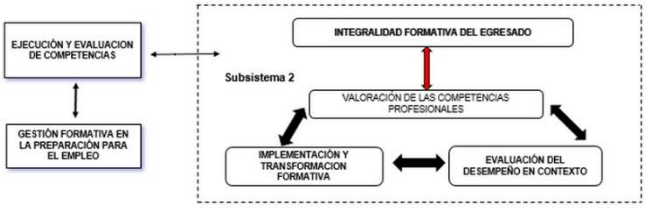

Fig. 2- Subsystem 2: Execution and valuation of competencies

As a purpose of the pedagogical model of training management in preparing the computer engineer for employment in the university-business relationship and synthesis of the subsystems, components and qualities that are integrated, the socio-professional skills of the computer engineer emerge as a superior resulting quality. These are configured from the integration in the management of the cognitive aspect of the profession, the humanism evidenced in ethical commitments, and the social relevance in response to the knowledge society and collaborative work for the sake of personal self-management.

Socio-professional skills from the training management perspective allow graduates to achieve initiative and motivation; objectives and priorities; planning and organization of time to carry out the tasks proposed to be performed by the computer engineer. Thus, from a cognitive

perspective, the appropriate selection and management of knowledge, resources and strategies are obtained to face different types of tasks, problems with different levels of complexity and novelty, with creative thinking.

From ethical commitments, the recent graduate reveals attitudes and ethical values linked to the professional performance of the computer scientist in the workplace; as a resource of the knowledge society, they highlight the management of information technology and communications: in the search, organization, collection of data, management of databases and their presentation; in which it is achieved as part of teamwork to develop different types of functions or roles, leadership as well as the joint construction of knowledge.

Therefore, the training management model in preparation for employment as a theoretical construct provided by research, sets out the following as proposals for socio-professional competencies in computer engineers:

- Programming and software development, through intentional collaborative work that meets the demands of the entity and the social environment, achieving efficiency through teamwork and reducing the possibility of errors, become agents of positive change in society.
- Mastery and exploration of hardware taking into account current events and adaptability to new situations and complexities in the environment, which will allow them to stay up to date, making them more effective in their work space and proactive in their professional development.
- Effective communication and problem solving through networking, which encourages collaboration with a critical and creative mindset that allows them to address innovative challenges and contribute to the digital transformation of organizations. From a theoretical validation of the proposed model, training management in preparing for employment of computer engineers is conceived as an integral process that includes motivation towards the objectives and priorities of the university-business context. This management involves the organization, planning, execution and evaluation of actions and tasks that graduates, tutors and employers must perform. The appropriate selection of knowledge, resources and skills, based on the cognitive level and the demands of complex and novel tasks, is essential to face problems in the work environment with creative, flexible and reflective thinking.

In order to validate this pedagogical model in practice, dissemination workshops were held within the research line of the degree, in the employing entities and with the participation of specialists from them, as well as with recent graduates. Meetings were also held with specialists at scientific events, which allowed triangulation of the information obtained and confirmation of the relevance and feasibility of the pedagogical model of training management in preparing computer engineers for employment within the university-company relationship. This validation was based on the following key points:

- Consolidation of training actions in the university-business relationship, mediated by training management in preparation for employment of computer engineers.
- Systematic training update, responding to the needs of recent graduates and the interests of employers in the training of socio-professional skills.
- Development of the updating process in the training of socio-professional skills in preparation for employment of computer engineers within employing entities.

The teachers, recognizing the theoretical-practical value of co-participation and training

systematization in preparing for employment, suggest that the proposed model be used as an instrument for updating the study plans in the Computer Engineering degree. The importance of preparing the computer engineer for employment in the university-business relationship is highlighted, underlining the need to systematize training through training management as an essential contribution to the formation of the socio-professional skills necessary in the current business context.

DISCUSSION

Preparation for employment is referred to by Pérez and Pinto (2020), from criteria that point out its interrelation with the labor market, where the graduate is inserted based on current economic dynamics, the globalization process, the increase in university graduates and the availability of jobs. The criteria of these authors are shared, referring to the transition processes between education and work, which occur as a result of training in higher education institutions, however, it requires avenues for the comprehensive training of graduates in order to enter the labor market.

The proposed pedagogical model is based on the General Systems Theory and is structured according to the structural-functional systemic approach proposed by Vázquez (2023), favoring preparation for employment in the Computer Engineering career. In this sense, the pedagogical model is conceived as a representation of the essential characteristics that allow solving the problem at hand, transforming the reality of preparation for employment.

From a pedagogical perspective, the principles of Higher Education and the dialectical, humanistic and complex approach to comprehensive training are considered, according to the contributions of Fuentes (2022), which emphasizes that the training of university professionals is a social, contextualized and personological process. In this context, the model is concretized in the university-business relationship, and in the sociological field, preparation for employment is assumed as a social phenomenon that determines the training of the university graduate, according to Suárez et al. (2022).

Likewise, Mengana and Guibo (2022) define preparation for employment as "a condition or state to face the immediate and future challenges of the labor market, for which individuals must acquire skills that allow them to learn to learn and apply the knowledge acquired in the profession" (p. 161). Position which is key to dynamizing the preparation for employment, which must ensure in the graduates, knowledge of their profession, its updating and feedback as well as the ethics of the individual to take responsibility for the tasks entrusted, the result of advances in technology and innovation, as well as socio-professional skills as part of their training management, resulting in professional performance modes.

Likewise, updating the knowledge of recent graduates in preparation for employment is a necessity, due to the speed of changes that generate new knowledge and new practices to respond to social problems from the workplace. However, there are still weaknesses in the professional performance of recent graduates that require training management to achieve the relevance of their work results.

Therefore, the dialectical relationship between the occupational profile requirements of the Computer Engineering degree and the needs of the university-business relationship in the professional performance of the recent graduate is considered a contradiction.

In this context, preparation for employment is considered as part of the ongoing training process, which must be conceived and implemented in employment entities in relation to universities, with the aim of continuing to

develop and improve the ways in which recent graduates operate in the workplace.

Criterion that supports that preparation for employment must constitute a process that ensures the progress of the graduate, by being more competitive as a result of the appropriation and acquisition of the knowledge received in the universities themselves, as a result of the articulation of theory and practice, in order to complete the assigned work activity, to favor the new work culture, the articulating axis of the demands of contemporary society.

It is taken into account that preparation for employment offers a look at the necessary university-business link, enabling the development of basic knowledge of their profession, commitment, responsibility, values, as well as skills specific to the job.

The above aims to reveal the advantages offered by the university-business link, which encourages the updating of knowledge as part of praxis and the recognition of the identification of the needs of companies, the acquisition and application of new advances in their work area, which enables the personal and professional development of graduates, according to their professional needs.

It is worth highlighting that the systematized references address the need for preparation for employment, a very current and little researched topic at the moment, worked on by authors from different positions such as: graduates' modes of action, the need to develop skills, the follow-up of the recent graduate from the company, training of graduates' skills upon completing their degree, however, the skills that allow this link outside the university context have been little worked on.

Therefore, a systemic vision is required in preparation for employment supported by training management, to strengthen the university-business relationship; focused on the acquisition of socio-professional skills in graduates, ensuring their individual and professional development relevant to meeting the demands of today's Cuban society.

Thus, the improvement of Higher Education and the process of continuous training from the university-company link reveals theoretical methodological limitations in preparation for employment from its epistemological characterization and historical analysis, which makes it necessary to integrate training management as a theoretical-practical construct in the Computer Engineering career.

The results obtained in the diagnosis, based on the instruments used and their interpretation, corroborate the need for training management in the stage of preparation for employment, which deepens and improves the socio-professional skills of recent graduates in IT.

The logic revealed in the pedagogical model assumes, as a theoretical basis, the training management that closes with a novel proposal of socio-professional competences in the computer engineer that can serve as a reference for other careers, taking into account that this period of continuous training is the least worked on in this space of improvement.

Therefore, the pedagogical model of training management in the preparation for employment of the computer engineer in the university-business relationship in the article is the result of the integration of the Educational Sciences and the Social Sciences as an assessment of the importance of socio-professional skills in the Computer Engineer.

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