

Formation of Laboring Competencies for Workers of the Oil Industry

Miguel Armando Arencibia Davila^{1,*}, Ines M Salcedo Estrada^{2,†}, Ileana Sarmentero Bon^{3,†}

¹Exploration Production Teaching Unit, Petroleum Training Center, Cardenas, Cuba

²Science Training Center, University of Matanzas, Matanzas, Cuba

³Faculty of Industrial Engineering, University of Matanzas, Matanzas, Cuba

Email address:

marencibia@cppvar.cupet.cu (M. A. A. Davila)

*Corresponding author

† Inés M Salcedo Estrada and Ileana Sarmentero Bon are co-first authors.

To cite this article:

Miguel Armando Arencibia Davila, Ines M Salcedo Estrada, Ileana Sarmentero Bon. Formation of Laboring Competencies for Workers of the Oil Industry. *International Journal of Management and Fuzzy Systems*. Vol. 7, No. 4, 2021, pp. 87-94. doi: 10.11648/j.ijmfs.20210704.13

Received: November 2, 2021; **Accepted:** November 26, 2021; **Published:** December 11, 2021

Abstract: The oil activity is one of the sectors prioritized by the Cuban government and its development requires the constant formation and training of the personnel who work there, thus the strategic mission of the Petroleum Training Center is the training of the personnel who work in the branch oil company and in this the formation of labor competence in drilling operators constitutes a fundamental pillar, for which it is intended to contribute to the formation of laboring competence in drilling operators in the formation scenario of the Teaching Unit Exploration Production and the oil company in Cuba. In order to respond to this reality, the theoretical and methodological references of competency training are studied, which reveals a theoretical plurality that allows combining competency training, the historical-cultural conception and advanced education, taking from them the significant elements, and evidencing the relevance of unity within diversity. It was possible to reach these results through the application of theoretical methods of science, such as the historical-logical method to determine the evolutionary antecedents and the logic of the development of labor competence, and the methods of analysis, synthesis, induction and deduction that led to theoretically and methodologically support the formation of laboring competence. The empirical level of science method used was the review of documents related to the training process and the quality management system since the training of the drilling operator's job competence is a professional training process that is supported by the training process. The determination of the referents and the training scenario in which the training process takes place showed the need for a modeling of the process to adjust it to the training context of the drilling operator.

Keywords: Competency, Laboring Competency, Training, Formation

1. Introduction

The Cuban government has always paid attention to the training of workers to increase the quality of the preparation of the workforce, understood as a process that requires the systematic interaction of the company and the training center to face the new challenges faced by workers in their professional performance, the protection of the environment and their participation in social transformations.

The oil activity is a sector prioritized by the Cuban government, and its development requires the training and qualification of the personnel who work there, so in 1985 the

Petroleum Training Center was officially founded.

In the production cycle of the oil industry, drilling oil wells is one of the most complex and dangerous processes for the health of operators and the environment, that's why the importance of paying attention to the training of drilling operators, which represents 80% of the human resources of the activity.

The accumulation of knowledge, the scientific advances and the experiences acquired by the occurrence of accidents and ecological disasters, have caused a progressive and constant technological development in the drilling activity that requires raising the levels of training.

The need for productive operators and participants in

economic and social development has led to the adoption, by the oil company, of the Cuban Standards ISO 3000: 2007 and ISO 10018: 2016, which require the training of competent drilling operators.

The training center in order to fulfill this demand requires designing a dynamic and practical training process, according to the social, economic and technological context. It implies analyzing the training of the drilling operator as a process focused on training labor competency, in which several dimensions must be considered, which go beyond the practical vision of the occupation in the applied training direction.

Investigations carried out about this subject, allowed the author to identify as essential references a group of works among which are those of: Mena, Dávila, Eróstegui, García, González, Valera, Ramos, Rodríguez, Carrasco, García, González and Pérez, all of them in the period from 2008 to 2019.

In these works, ideas were found that are part of the author's conception of labor competency, García [1] argues that the development of competency must "maximize the human dimension."

Raineri, (as quoted in Rubio and García [2]), expresses about the description of the competency for a job position that depends on the "study interests or authors, the hierarchical level of the personnel where the study is focused and the industry for which the categories are defined, among other aspects".

For their part, Aguiar and Rodríguez [3] affirm: "You cannot qualify a man as competent just because he executes concrete actions efficiently to solve specific tasks."

The task "Learning and training of competencies at Matanzas University" belonging to the project "Improving the training of undergraduate and postgraduate professionals in Higher Education in Matanzas" constitutes an important reference in the vision of this thesis, by the theoretical contributions about the conceptualization of the labor competency of the drilling operator.

The author, in the period 2013-2014, carried out a study of documents that allowed him to define shortcomings that affect the training process for drilling operators, which are described below:

The applied training model is empirical; it is based on the theoretical instruction of the operators based on the content of the job profile that describes tasks and responsibilities.

The operators evaluation is based on performance, structured on the basis of job competence, so the result is not as expected due to shortcomings in their preparation, mainly in environmental management and production culture.

The geographical coincidence of oil and tourism, which requires a harmonious coexistence, demands operators with training in behavioral issues.

No practical training period is envisaged for drilling operators after the instructional stage.

The cloister has limitations because it does not respond to the current demands in the training of operators, there is a lack of communication between the training center and the

oil company, which makes it difficult to direct the training process.

The methodological preparation of the faculty is not always aimed at strengthening the capacities of its members, in order to ensure that the quality of learning allows the graduated worker to function satisfactorily in the social and work areas.

The reality verified and previously described in the context of the Production Exploration Teaching Unit (UDEP), of the Petroleum Training Center, becomes reasons that justify modeling the training process in the training scenario to form the labor competence in drilling operators that allows to prospectively represent the characteristics of this process in the academic, structural and functional aspects for the solution of theoretical and methodological deficiencies in the formation of this job occupation in the oil company.

2. Development

2.1. Historical Antecedents of Technical and Professional Education as Theoretical Premises of the Training System of the Oil Industry in Cuba

The historical development of technical and professional education has been conditioned to the development of the productive forces and their material and social needs. The preparation of workers has been recognized as a problem throughout the development of humanity.

In Cuba, technical and professional education has its antecedents in the colonial period. García [4] points out that during the Government of Don Luis de las Casas, culture and education spread, the first public library was founded in Havana as well as the Economic Society of Friends of the Country, the latter institution paid special attention to education of artisans, laborers and workers in general.

During the 18th, 19th and first half of the 20th century, notable personalities, among which Francisco de Arango y Parreño (1765–1837), Félix Varela y Morales (1787-1853), José de la Luz y Caballero (1800-1837) stand out. 1862), Francisco de Frías y Jacob (1809-1877), Álvaro Reinoso Valdés (1829-1888), José Martí Pérez (1853-1895), Enrique José Varona y Pera (1849-1933) and Fernando Aguado y Rico (1859– 1941), offered a foundational legacy for education at work, their ideas pointed to the need for the preparation of workers, the application of new practices on the education of workers, the modernization and extension of technical education, teaching scientific, the link between general and technical-professional instruction, the value of the application of science and research to technical education and the unity of study with work [5].

When the Revolution triumphed in January 1959 in Cuba there were close to two million illiterates, the workers sector standing out with greater illiteracy [6]. The migratory process, which occurred in that period, caused a great deficit of qualified labor force.

To solve this literacy and workforce deficit, a process of transformation in technical and professional education began,

according to Abreu et al. [5] actions that endorse these transformations are: the creation of new industrial technical schools, the introduction of pre-professional practice in labor entities, the application of the Marxist and Martian principle of linking theory with practice, incorporation to the Vocational Schools of the under-schooled young people, the conception of new occupational profiles in response to the productive demands and the planning of labor training for graduates of Technical and Professional Education.

In the author's opinion, the signing of the 1974 Paid Study Leave Convention gave workers new possibilities to solve their real needs for permanent training in response to changes in the social, economic and technological context in which they work.

Other arguments that support the evolution of technical and professional education, according to Abreu et al., [5] are that the training of technicians in universities and in their own employment is guaranteed, the polytechnic-company relations are updated in response to the change in the socio-economic context, the Branch Program for Technical and Professional Education is created, the participation of specialists in production and services as teachers of technical and professional education is encouraged, and the Regulation for the training of professionals is approved workers.

Bermúdez [7] considers that the training process in Technical and Professional Education has achieved a sustained and progressive development, which can be seen in the number of attached classrooms, the industry experts who teach and the teachers who are linked to the industry to perfect their technological knowledge, essential elements to achieve an effective integration of educational institutions with labor entities.

Carrasco [8] has pointed out, in accordance with the Organization for Economic Cooperation and Development (OECD), Unesco and other institutions, that social changes and technological development have posed challenges to technical and professional education that should influence the training of workers.

The analysis of the historical antecedents of technical and professional education in Cuba allows considering them as part of the theoretical premises of the training system of the oil industry in Cuba. The foregoing is summarized in the following considerations, since the professional training of Cuban workers:

It has been a secular aspiration of Cuban progressive and revolutionary thought; It has been an important part of the history of education and educational thought in Cuba; It must be in correspondence with the specific conditions and needs of the country; It must consider the most relevant aspects of professional pedagogy worldwide with a critical and creative character, as well as the contributions made after 1959; It is an essential aspect for the achievement of the economic and social development of the country.

2.2. The Job Skills of Oil Well Drilling Operators

The theoretical and methodological foundations that support the formation of the labor competence of oil well

drilling operators need to address the term competence in the first place.

Tejada [9] carries out a review of the meanings of these verbs and nouns in different dictionaries of the Spanish language, finding concordant meanings that allow the use of these words in the social and labor spheres.

The most significant and common meanings are: aptitude, suitability, suitable, capable, skillful, capacity, sufficiency, disposition and capable.

These semantic meanings of competence and competent are reflected in the various studies and conceptualizations carried out on the category competence, the definition of which has been drawn up by numerous authors.

At the international level, the work carried out by Chomsky; McClelland; Tejada; Via & Izquierdo; Acevedo; Town; Strap; Ríos & Herrera; and Espinach.

At the national level, the definitions provided by Fonseca have been revised; Véliz, Jorna & Berra; Ramos; Alonso & Hidalgo; and González.

This volume of works shows the great diversity and often contradictory theoretical production on competences [10], and the evolution of the process of conceptualization of the competence category, and how its conceptual apparatus has been built.

Ramos [11] determines four attributes of the competencies. In the author's opinion, the definitions of competence analyzed allow us to expand these attributes, which can be expressed as:

Their results are influenced by the context in which they are developed or applied; they are personal, include knowledge, skills and personality traits; they are superior to the linear sum of personal attributes; they are formed and manifested in action; they are acquired and formed permanently throughout life; In order for them to manifest, they must integrate knowledge, skills or abilities, and attitudes.

The author, evaluating the criteria expressed in the works studied, summarizes the definition of competence, in its broadest generic sense, stating that it is the system of components (knowledge, skills and attitudes) whose synergy leads to an individual's performance, in a specific socio-historical and spatio-temporal context.

The use of the term competence, associated with work activity, appears as a result of the work of David C. McClelland at Harvard University, gaining strength from the eighties of the twentieth century.

The literature consulted offers a large number of definitions in which the terms professional competence or labor competence are used interchangeably. In this regard, the author agrees with Abreu et al., [5] that the concept of labor competence, due to its breadth, encompasses the concept of professional competence, because labor implies everything related to the world of work, be it profession or trade. Therefore, for the purposes of this work, the term labor competence will be used.

The epistemological analysis carried out by the author on the different definitions of labor competence, allows to

appreciate a certain tendency to employment in his texts of the terms: knowledge, skills and attitudes, which together with other terms used such as: knowing, knowing how to do, knowing how to be, capacity and dexterity that are used in the same sense as the most common ones already mentioned, reveal a guiding line evidencing a unity of criteria or perceptions within the diversity of authors and contexts in which these definitions have been elaborated.

A synthesis of these studies are the criteria expressed in the five-year period 2012-2017, by various authors, Abreu *et al.*, [5] express "an integral competence: knowing, knowing how to do and knowing how to be". Pérez [12] states "An integrative understanding of competences (...) makes it possible to dynamically unify knowledge, know-how, knowing how to be, knowing how to be and wanting to do, based on successful behavior". Ramos [11] argues "competition requires knowing how to chain different actions and not only apply them in isolation."

As a result of this analysis, the author defines labor competence as the system of components (knowledge, operational capacity and attitudes) that an individual possesses, whose synergistic relationship produces the efficient execution of his labor activity with a positive result in time and quality for the organization.

As a synthesis of Rico's works; Abreu *et al.*; and Añorga is characterized by labor competition because:

It takes place in the real context in which it will be applied; integrates knowledge, skills and attitudes, which interact with each other, hence its holistic quality; it is associated with performance or execution criteria; the operator is responsible for their learning; their training or development depends on the motivation of the operator; it is dynamic, dialectical, observable and measurable; Despite being specific to the operator, not the job, it can be trained or developed depending on the context in which the operator operates.

Taking into account the general analysis carried out on the definition of competence and its derivation to define labor competence, it is pertinent to particularize in the definition of the labor competence of the oil well drilling operator.

The job competence of the oil well drilling operator is conceptualized by the author as the system of knowledge, operational capabilities and attitudes for the protection of their health and the environment, which allow drilling of oil wells with positive results, achieving in turn the improvement of its performance.

2.3. Training of Job Competencies in Oil Well Drilling Operators

To address the essence of the formative process of labor competence in oil well drilling operators, it is necessary to establish the interrelationships with training, a process that serves as an epistemological foundation.

The participation of the subject in the construction of his learning, the search for the meaning of what he learns, the management of resources for the treatment of unforeseen situations, reflection and conscious participation in confronting the problems of the context in which he works,

are ways to achieve training.

The analysis carried out distinguishes the meaning of the training process at the level of the subject's specialization, it allows from this reference to analyze professional training, understanding the profession as a trade, activity, art, career, occupation, employment, and professional is referred to the subject who exercises a profession with speed, accuracy, precision and care, based on empirical experience or formal instruction [13].

The Organization of Ibero-American States considers professional training as the development of capacities of individuals to learn and adapt to technological changes, and the International Labor Organization appreciates it as a process to develop work skills.

The works of Domínguez; and Torres, (as cited in Tellez, Mendiola & Barly [14]) serve these authors as support to express that the subject learns to solve the problems that are manifested in their profession.

Llerena [15] subscribes that the professionals in training must "try to be fully inserted in the social and productive processes".

The analysis of these works carried out by the author on vocational training allowed him to identify as concordant elements: knowledge to carry out a professional activity, development of work skills, and preparation of the individual to enter society and solve technological problems.

The author's understanding of these sentences allows him to consider professional training a preparatory process for the individual to perform an efficient socio-labor function, which in his opinion means to form a competent individual.

In works such as "The school in life" [16] and "Pedagogy as science (Epistemology of Education)" [17] aspects of theoretical and methodological value are recognized for the modeling of the process of formation of labor competency in operators of drilling of oil wells, among them the author is ascribed, to ideas such as that the preparation of a society depends on the preparation of each of its members; the ability of an individual to solve problems in the workplace is indicative of their readiness; preparing the individual for work in their social context is the goal of training. The main task of a society is to prepare its citizens and the preparation of an individual implies training him to perform a certain social function.

For the cited author, the term preparation is indicative of training and in this sense, as stated by González & Ginoris [10] "training is key in the formation of competencies".

The theoretical analysis carried out concludes, from the author's point of view, that the formation of labor competency is a process of professional training and that in the context of the training of an oil drilling operator it is developed from the referent and in the context of a training process.

In the analysis of the definitions of the professional training process and the training process presented by the author, there are concordant elements that make them consubstantial and mutually enriching.

The professional training process of the drilling operator

throughout his working life, enables him to obtain qualification, promotion to higher job categories and be prepared to assume the changes that occur in the organization when developing labor competency, so it concludes that "their training must, and is by its essence a continuous learning process" [10].

The professional training process has the quality of constituting the most general category and, therefore, in it the processes of formation of labor competency and training harmonize as particular categories, the result of which becomes the formation of the labor competency of the drilling operator.

This author appreciates that the formation of labor competency and the training process interact, interrelate and mutually enrich each other.

The training process plans and systematizes the preparation according to the result of the worker's performance and the needs of the company, which allows them to appropriate the knowledge, operational capacity and attitudes that the company demands.

In the interest of this research, it is necessary at this time to address the formation of labor competency in the oil well drilling operator where the author distinguishes the most significant elements contributed by the authors consulted in the context of this thesis.

The theoretical elements provided by the work studied allow to define the training of labor competency in drilling operators as a training process developed in the training center, with a close theoretical-practical link, during which the drilling operator of Oil wells appropriates knowledge, operational capacity and attitudes, the result of which is expressed in daily practice with the improvement of professional and human performance.

In the process of training the labor competency of the drilling operator, it is based on knowledge and know-how, where skills, abilities and capacities are articulated and integrated in a particular way, but this training is not reduced only to them, it seeks to enrich and enhance knowing how to be.

The selection group of candidates for drilling operators has a great diversity of ages, education levels, and life experiences, so the organization of the teaching and learning process requires solving the problem of how to guide the adult so that learning is better, since it is not a homogeneous process. [18]

Bernaza [18] analyzes heterogeneity as a strength seen from the Cultural Historical Approach (EHC), which is manifested through the culture they possess and which are generally professional experiences and experiences.

This strength is explained because the social development situations of each of the participants, including teachers and instructors, are enriched.

The design of the process for the training of labor competency must be structured respecting what an individual needs to know, know how to do and be, according to the demands of the profession for which he is training [5], in correspondence to the training needs requested by the

employer.

The above-mentioned statement validates Eróstegui's [19] criterion, which states:

In this way, the pedagogical and thematic concepts of vocational training in force for many years lose their validity in the face of transformations. Considering technical training as "the orderly and systematic transmission of abilities and skills, and technological knowledge for workers who work in skilled and semi-skilled occupations, today there is a growing concern for other dimensions such as those linked to a new culture of work and production, from the perspective of a continuous training process.

In order to dig into the theoretical and methodological contributions on the training of labor competency in general and in drilling operators, in particular, a search was made for proposals from the pedagogical sciences that offered the author various perspectives on training models with competencies approach. The results obtained in the studies consulted in the period 2008-2018, reflect the agreement of the authors, regardless of the approaches and paradigms they assume, that the formation of competency must contribute to the solution of problems of a social nature, assume the contributions of science and technology, contribute to humanistic training and citizen participation, in a specific socio-historical context. The proposed models, among them those whose object of transformation is training, Estrada is cited; Salgado; Meadow; Rodríguez, A.; and Rodríguez R., have in common in their conception, despite the contextualization: the foundations, the structuring by stages, the system of principles, their relationships and their dynamic and flexible character.

Consequently, the formation of labor competency must be considered, as expressed by González & Ginoris [10] "as a complex, gradual and continuous process, and differentiated according to the social conditions of development of each subject".

The training of labor competency in oil well drilling operators is conceived as a process, where teachers and instructors have the possibility of updating the contents without violating the regulated time for training activities, vivid or real, since it is given as a set of actions to execute what it is planned and achieve the training of the drilling operator's labor competency in the real conditions of the industrial environment, it is for this reason that the design of the training activities starts from identifying the knowledge, skills and attitudes that make up the drilling operator's job competency.

The act of preparing teachers to assume the possibility of contextualizing and updating the content requires a close link and interrelation between the training center and the company. In this way teachers and instructors exchange experiences and knowledge to improve each other, and then achieve the standard role and guidance to be performed by teachers and professionals who accompany the operator in their training for work activity, because you cannot teach what you do not have [10].

The design of the training process includes the planning of

the teaching stage, where with the guidance of the elaborate program; the objectives, contents, and methodology (methods, their organizational forms; the learning activities, their orientation and control; the use of the media) are determined, and the practical stage developed in real conditions [20].

The objectives and contents respond directly to the dimensions and indicators of the drilling operator's job competency. Consistent with what was proposed by Bernaza *et al.*, [20] the methods should take advantage of the experiences of the drilling operators and the learning activities be pertinent to the job, which positively influences their motivation.

The motivation of the adult is directly proportional to their willingness to learn, so they learn more easily according to their personal interests, about which they have clarity, revealing the contradiction between personal and social interests, only relevant due to their meaning, it can be incorporated to their experience [20].

Achieving the formation of labor competency will inevitably lead to raising the socio-productive results of the organization and will promote the development of the personality of the oil well drilling operator.

2.4. Training Centers in the Cuban Business System

The analysis of the development of technical and professional education in Cuba and the world allows the author to assert that the presence of training centers is due to the objective need for social and productive development, to prepare the worker for a qualitative new work, given by technological and scientific advances, social changes, the specialization of productive work, the volume of knowledge accumulated by society, the tendency to the process of differentiation and specialization within each economic and productive branch, which results in a particularization or professional division.

The strengthening of the labor competency training standard, which has been adopted in the world of work, to which Cuba is not a stranger, has given rise to strength to the criterion that labor organizations and entities should be responsible for the technical and professional education and not the Ministries of Education. The author does not agree with this criterion, because although it is true that technical education is carried out in training centers, educational systems cannot be excluded from the pedagogical direction of non-university labor training for the specialties necessary in the progress of society, which demands professionals with a general and comprehensive technical culture, with values that allow them to insert themselves into the socio-economic life of the country and competently face labor challenges in a productive sphere in continuous change and development, as Martí said [21]: "Prepare man so that he can live decorously on his own, without losing the grace and generosity of the spirit, and without endangering the dignity and strength of the country with his selfishness or servitude."

In Abreu *et al.*, [5] refers to the fact that in many countries these institutions at the service of the productive and service sectors have been subordinated or controlled by the

Ministries of Labor, however different international organizations such as the United Nations, Education, Science and Culture Organization (UNESCO) and the Organization of Ibero-American States (OEI) are working to combine it with technical education.

The author shares the criteria of Abreu *et al.*, [5] when they state that this trend directs the preparation of workers towards a narrow and markedly utilitarian profile based only on production, preparing them for a job and not for work, preventing educational institutions to have educational leadership and the conception about the worker to be trained.

In the current dynamics of international globalization, many companies have adopted the concept of corporate university to transmit knowledge and skills required by the company [22]. With this organization it is possible to optimize resources, investing in learning that directly impacts the activity of the company since it focuses on the specific knowledge that the worker must acquire, according to their activity.

These institutions represent a competitive advantage, by promoting growth and ensuring the sustainability of the company that is committed to human capital and its skills.

The promulgation of Decree Law 350/2018 [23], which puts into force the regulations that enable the improvement of branch schools and training centers to respond to the current demands of the Cuban economic model in the continuous improvement of the performance of *cadres* and workers, and their relationship with the ministries of Education and Higher Education; as well as the creation and application of new study plans in Higher Education and postgraduate completion, may constitute precedents for the creation of these corporate universities in Cuba, taking into account the results achieved in some labor sectors.

The analysis of these approaches leads the author to several considerations:

The humanistic training of workers is a necessity of society, it is necessary to train them for work.

Achieving competent behaviors in the different spheres of production entails keeping man at the pace of technological development to assimilate changes and access the labor market, which results in benefit for the economy.

The danger that results from divorcing the educational and labor sectors cannot be ignored, so it is necessary to encourage ties between the school and the labor entity since the legislative provisions for their development exist.

The relationship between educational centers and training centers must be strengthened from a collaborative perspective and two-way methodological advice, so that the leadership of each of the parties can be combined to achieve the training of men with a competency that allows them to know, know how to do and know how to be.

In Decree Law 350/2018 [23], these centers are defined:

ARTICLE 12. Training centers are defined as educational institutions approved by the heads of state bodies, agencies of the Central State Administration, national entities, provincial administration councils, Isla de la Juventud special municipality and superior business management

organizations. Their mission is to develop the training of workers.

The study of Decree Law 350/2018 [23] makes possible to establish the differences between training centers and branch schools; and the polytechnic schools of Technical and Professional Education and the universities, which is expressed in article 5, which states:

The training of workers is developed in the educational centers of the National Education System in the specialties that are related to them and according to their capacities. Those training actions that cannot be carried out in these institutions are developed in the Branch Schools or Training Centers, together with the Ministry of Education or Higher Education, as the case may be.

Several Cuban ministries have established collaboration agreements with the Ministry of Education and the Ministry of Higher Education, under Law 350/2018 [23], among them are the Ministry of Energy and Mines and CUPET Union, in order to promote the development of the workforce in its training centers.

These collaborations have promoted the pedagogical development of the training centers, where the methodological and investigative work has favored the professors to reach teaching categories and academic and scientific titles, as well as courses to improve knowledge.

In the Petroleum Training Center, some formative conceptions have been adopted as policy such as:

The integration between professional preparation and the reality and need of the country; the link or unity between theory and practice; the professionalization and scientific-technical updating of the teaching contents; the continuous nature of education, the need for the student to learn to study and the need to apply productive methods in teaching.

The possibilities of the Petroleum Training Center have made it the main entity responsible for training the human resources of the oil industry in Cuba.

The development of the Petroleum Training Center shows a growing trend in its participation as a fundamental actor in the training of CUPET's human resources, particularly during the last 15 years the Production Exploration Teaching Unit, specialized in the training of operators and improvement of technicians from oil well drilling and oil production activities, which has been recognized by the Ministries of Education and Higher Education.

3. Conclusions

Training skills has been a recurring theme in scientific work in the last decade; this has provided the theoretical and methodological references to define the training of the drilling operator.

The training process is conceived from a theoretical plurality, combining training by competencies, the historical-cultural conception and an advanced education, taking from them the significant elements, and demonstrating the relevance of unity within diversity.

The analysis carried out of the theoretical and

methodological references of competency training reveals the understanding of the formation of labor competency as a professional training process to which the training process is congruent as a result of forming the labor competency of the drilling operator.

The approach to the Petroleum Training Center, a training scenario for drilling operators, showed the need to model the process of training labor competency, since the models consulted by the author do not adjust to the particularities of the drilling operator or to the educational context.

References

- [1] García, J. (2011). Educational model based in competency: importance and need. *Update Education Research*, Vol. 11 (No. 3), pp 1-24. Retrieved from <https://reista.inie.ucr.ac.cr/>.
- [2] Rubio, P., & García, J. (2014). Management of training by skills in food operators as a competitive advantage of industrial canteens in private companies. *URBE Magazine*, Vol. 12 (No. 1), pp 207-230.
- [3] Aguiar, X., & Rodríguez, L. (2018). The formation of pedagogical competences in university professors. *Edumecentro Magazine*, Vol. 10 (No. 2), pp. 141-159. Obtained from <http://www.revedumecentro.sld.cu>.
- [4] García, G. (1978). Historical sketch of Education in Cuba. Havana: Editorial Libros para la Educación.
- [5] Abreu, R., León, M., Santos, J., Cejas, E., & Álvarez, Z. (2012). Towards a pedagogy of Technical and Professional Education of the XXI century. Havana: (f / d).
- [6] Pérez, C. (2015). The pedagogy of the Technical and Professional Teaching in Cuba: Its background. *Trabalho necessário, year 13, number 22/2015*. Taken from www.uff.br/trabalhonecessario.
- [7] Bermúdez, R. (2013). The Public Policies for the Technical and Professional Teaching in Barrel. *IAII International Coloquio on Professional Education and Voluntary Abandonment of School*. Havana, Barrel. 15 Álvarez, C. (1999). *The school in life (Didactics)*. Havana: Town and Educación (digitized for chapters, with paginated independent).
- [8] Carrasco, R. (2014). The seven challenges of the technical and professional education for the century XXI. *Project: "Challenges for the Technical Education of the XXIst Century"*. Chile: Educarchile. Recovered on august 10th 2017 from educarchile.
- [9] Tejada, J. (1999). About the professional competencies (I) and (II). *Tools Magazine* (No. 56 and No. 57), (pp. 20-30), (pp. 8-14).
- [10] González M, and Ginoris, O. (2019). Task: Learning and formation of competitions in the University of Matanzas. Introduction., Matanzas, Cuba: CENED. Faculty of Pedagogic Sciences of the University of Matanzas.
- [11] Ramos, O. (2017). *Educational developmental strategy of the preventive competition of the team of oral health in the oral and dental diseases*. Doctor dissertation, University of Pedagogic Sciences Enrique José Varona, Havana.

- [12] Pérez, O. (2014). Methodological and Theoretical referents for the boarding of the competitions in the Technical and Professional Education. In R. Abreu Regueiro, and J. Soler Calderius, *Didáctica of the Technical and Professional Education* (págs. 366-376). Havana: ISPETP Hector Alfredo Pineda Zaldívar.
- [13] Añorga, J. (2012). *The Advanced Education and the Professional and Human Improvement*. Doctor dissertation, Havana.
- [14] Téllez, L, Mendiola, M, and Berly, L. (2015). Technical training and continue of the technicians of average level. Cuban experience. *TELOS. Magazine of Interdisciplianry Education in Social Sciences. University Raphael Belloso Chacín, Vol. 17* (No. 2), Págs. 242-259. Recovered on October 25, 2017, from <https://www.TELOS>.
- [15] Llerena, O. (2015). The process of technical training from a complex and historic cultural point of wiew. *Electronic magazine Investigating current affairs in Education, Vol. 15* (No. 3), Pág. 1-23.
- [16] Álvarez, C. (1999). *The Pedagogy as a science: Educational Epistemology*. Havana.
- [17] Álvarez, C. (s.f). *The school in life (Didactics)*. Havana: Town and Educación (digitalized for chapters, with paginated independent).
- [18] Bernaza, G. (2013). *Forging pedagogic ideas on the postgraduate course from the historic cultural focus*. Culiacan: University of Sinaloa.
- [19] Eróstegui, R. (8 / 2016). Technical moving formation. *Technical professional formation*. Bolivia. Recovered on October 7th, 2018, from <http://www.formaciontecnicabolivia.org/noticias?nid=698> technical moving formation.
- [20] Bernaza, G, Troitiño, D, and López, Z. (2018). *The professional's overcoming: Moving ideas and advancing*. Havana: Leading article University.
- [21] Marti, J. (1975). *Complete works* (Vol. 5). Havana: Social sciences.
- [22] Tamanini, H, and Bergero, H. (2012). The corporate universities, a new model of training. *Petrotecnia*. Recovered on June 12th, 2017 from <http://www.petrotecnia.com.ar>.
- [23] Central State Administration. (February 13, 2018). Decree-law 350/17. *Of the training of the workers*. Havana, Cuba: Official gazette of Cuba, ISSN 1682-7511.