# MENDIVE

## REVISTA DE EDUCACIÓN

**Original article**

# The task of professional learning for the formation of a competent worker

## La tarea de aprendizaje profesional para la formación de un trabajador competente

## A tarefa da aprendizagem profissional para a formação de um trabalhador competente

**Luis Aníbal Alonso Betancourt** [1]

https://orcid.org/0000-0003-0989-746X

**Vadim Aguilar Hernández** [1]

https://orcid.org/0000-0003-2690-6380

**Miguel Alejandro Cruz Cabezas** [1]

https://orcid.org/0000-0001-6544-038X

[1] University of Holguin. Cuba

lalonsob@uho.edu.cu ,
mcabeza@uho.edu.cu

[2] University of Pinar del Río "Hermanos Saíz Monte de Oca". Cuba

vadim.aguilar@upr.edu.cu

**ABSTRACT**

The objective analysis of the initial and continuing professional training of workers in today's world faces a series of challenges; among others: to achieve the availability of graduates who are competent to fulfill the functions inherent to the object of work of their profession. The objective of this article is to present a procedure for the development of professional learning tasks for the training of a competent worker. The methods of analysis and synthesis, the hypothetical-deductive, document review, system approach, observation, the pedagogical pre-experiment and the Chi-square statistical test ($X^2$) are used . As a sample, the students of medium technician in Industrial Mechanics from the municipality of Holguín, Cuba, were part of the research, in which the improvement of learning results as competent workers was demonstrated. The result can be generalized at a national and international level according to the characteristics of the teaching-learning process, aimed at the professional training of workers. A consensus is reached that the application of the procedure contributes to improving the quality of professional training (initial or continuous) of competent workers.

**Keywords:** learning; competent; training; procedure; task.

**RESUMEN**

El análisis objetivo de la formación profesional inicial y continua de los trabajadores en el mundo actual enfrenta una serie de desafíos; entre otros: lograr la disponibilidad de egresados que sean competentes para el cumplimiento de las funciones inherentes al objeto de trabajo de su profesión. El presente artículo tiene como objetivo exponer un procedimiento de desarrollo de tareas de aprendizaje profesional para la formación de un trabajador competente. Se utilizan los métodos de análisis y síntesis, el hipotético-deductivo, revisión de documentos, enfoque

de sistema, la observación, el preexperimento pedagógico y la prueba estadística Chi-cuadrado (X2). Como muestra formaron parte de la investigación los estudiantes de técnico medio en Mecánica Industrial del municipio de Holguín, Cuba, en la cual se demostró el mejoramiento de los resultados del aprendizaje como trabajadores competentes. El resultado puede generalizarse a nivel nacional e internacional acorde a las características del proceso de enseñanza-aprendizaje, dirigido a la formación profesional de los trabajadores. Se llega al consenso de que con la aplicación del procedimiento se contribuye a mejorar la calidad de la formación profesional (inicial o continua) de trabajadores competentes.

**Palabras clave:** aprendizaje; competente; formación; procedimiento; tarea.

### RESUMO
A análise objetiva da formação profissional inicial e continuada dos trabalhadores no mundo atual enfrenta uma série de desafios; entre outros: conseguir a disponibilidade de diplomados competentes para o desempenho das funções inerentes ao objecto de trabalho da sua profissão. O objetivo deste artigo é apresentar um procedimento para o desenvolvimento de tarefas de aprendizagem profissional para a formação de um trabalhador competente. São utilizados os métodos de análise e síntese, o hipotético-dedutivo, a revisão documental, a abordagem sistémica, a observação, a pré-experiência pedagógica e o teste estatístico Qui-quadrado (X2). Como amostra, fizeram parte da pesquisa os alunos de técnico médio em Mecânica Industrial do município de Holguín, Cuba, na qual foi demonstrada a melhora dos resultados de aprendizagem como trabalhadores competentes. O resultado pode ser generalizado em nível nacional e internacional de acordo com as características do processo ensino-aprendizagem, voltado para a formação profissional dos trabalhadores. É consenso que a aplicação do procedimento contribui para melhorar a qualidade da formação profissional (inicial ou contínua) de trabalhadores competentes.

**Palavras-chave:** aprendizagem; competente; treinamento; procedimento; tarefa.

## INTRODUCTION

The historical-concrete conditions in which the world has lived since the beginning of the 21st century is marked by the dynamics of complex processes of transformation or readjustment, especially at the economic, political and social levels. High technological development and the conditions of an increasingly globalized world have led to the characterization of contemporary society as a "knowledge society".

Porta and Tarrió (2019) consider that the introduction of technologies and rapid changes in the market and in production strategies have influenced work content and the need for worker training. Companies need qualified personnel, as well as a safe and healthy workforce.

The competent worker is one who performs with quality, efficiency, effectiveness, creativity, entrepreneurship, teamwork and leadership, a work activity or set of them in an academic, work, community and/or family context, in which he demonstrates through of their performance a legal, ideological, economic, energy, environmental, scientific, technological, management (management) and general and comprehensive basic training that will allow them to achieve the goals, objectives, solve a problem (social or professional) and / or produce material goods and feasible and relevant services to

meet individual and/or collective human needs.

Conceiving a teaching-learning process for the training of competent workers implies recognizing their professional approach (Alonso, Cruz and Ronquillo, 2022); that is to say, to conceive learning tasks that contribute from each subject, discipline, from the academic, labor and investigative component, to the formation of a competent worker.

Professional learning is:

> The process of appropriation of contents associated with the object of work of a profession, specialty, occupation and trade that the worker achieves in initial or continuous training, autonomously or in creative teamwork, which allows its application in solving problems. professional problems, based on the meanings, senses and professional experiences that are acquired in an alternative way during teaching, labor insertion in production and service entities, scientific research work associated with technological innovation and extension or community that he carries out, which results in professional growth of his personality in the short, medium and long term (Alonso, Cruz and Ronquillo, 2022, p. 20).

Various authors have investigated the learning task and its results, including Álvarez (1999); Silvestre and Zilberstein (2002); Sanchez (2013); Bermudez and Perez (2015); Quijije and López (2016); Meneses and Guiterrez (2016); Ortiz (2017); Campos and Machado (2018); Vidal and Castillo (2019); Guzmán, Brito and Fonseca (2019); Ballesteros (2020); Alonso, Cruz and Olaya (2020); Alonso, Ortiz and Cruz (2021); Alonso, Cruz and Ronquillo (2022); Fontalvo, Delahoz and De la Hoz (2022), who have studied the teaching task, learning, its results in student evaluations; however, due to its objectives, there is a need to systematize said criteria from a conception of professional learning aimed at training a competent worker.

The foregoing constitutes a challenge and current problem of Professional Pedagogy and its Didactics, which is intended to recognize the need to conceive the learning task from a professional approach that contributes from each subject, discipline, from the academic, labor, investigative to the formation of a competent worker.

That is why it was pertinent to investigate the following problem: how to conceive the learning task that contributes to the formation of a competent worker?

Hence, this article aims to present a procedure for the development of professional learning tasks for the training of a competent worker.

The investigation raised the following hypothesis: the application of a procedure for the development of professional learning tasks based on the professional learning method for the training of workers, in which the academic component (teaching) is integrated with the labor component (insertion in attached classrooms, labor entities), research and extension based on the relationship instruction-education-professional growth, significantly influences the training of competent workers.

## MATERIALS AND METHODS

A quantitative, experimental type of research was carried out and, within it, the pre-experimental type, according to Hernández, Fernández and Baptista (2014).

The analysis and synthesis, hypothetical-deductive, document review and system approach methods were used, which allowed the elaboration of the referential theoretical framework of the investigation, the justification of the problem, for the training of the competent worker.

The analysis and synthesis as a logical thought process allowed to identify, organize and summarize the actions to be carried out, which made it possible to interpret the professional learning in the training of the competent worker. Regarding the review of documents, the Study Plan, the programs of the Specialty Technology and Specialty Practices subjects, as well as the lesson plans and reports of academic results, were examined for the establishment of the theoretical framework of the investigation. , as well as national and foreign scientific literature, to epistemologically characterize the learning task.

The following were also used: the observation method, which allowed diagnosing the professional training of the students of medium technician in Industrial Mechanics; the hypothetical-deductive, which allowed the acceptance or rejection of the research hypothesis; The system approach was applied in the integration of the research results, as well as in the establishment of the links between the actions that make up the system, establishing their interdependence.

The pre-experimental design was appealed, according to Hernández, Fernández and Baptista (2014); To validate the conception, the Chi-square statistician ($X^2$) was used to verify the research hypothesis and the significant transformations achieved in professional training, which allowed us to verify the existence of significant improvements in the training processes of competent workers with the implementation of the procedure.

The universe was made up of 90 students of medium technician in Industrial Mechanics from the municipality of Holguín, Cuba . The sample was selected by simple random sampling, assuming by statistical recommendation 30.0% of the volume of the population, in this case 30 students.

## RESULTS

This section presents the results obtained with the application of the methods of the theoretical level and the empirical level in the investigation. From the theoretical study carried out, the topicality of the problem is verified; It was also possible to verify the diversity of points of view on the learning task.

The competent worker demonstrated a professional training in which he expresses a comprehensive political-ideological, legal, economic, scientific-technological and management, environmental, economic, energy and general basic training, synthesized in the following aspects.

### Legal and ideological training

It is expressed in the mastery and application of the policies and legal regulations that regulate work in a certain labor entity, as well as the diversity of technical and work safety regulations that must be complied with in a certain job position.

## Economic Training

It is formulated in the appropriation of content that the worker manifests towards the assessment of the socioeconomic situation of the labor entity and of society in a general sense, as well as towards economic activity, which allows him to make decisions in order to guarantee care , the protection, conservation and optimal use of the material, human and financial resources that are used during the application of technological work methods associated with the object of work of the profession, specialty or trade that is studied, which contribute to the improvement of quality and efficiency of production and services.

## Energy Training

It is enunciated in the knowledge about energy, as well as skills, values, attitudes and forms of action in which the efficient and rational use of the means and electrical equipment used by the worker in the technological work methods for the solution is contributed. professional problems related to their profession, occupation or trade, which contribute to saving electricity.

## environmental training

Expressed in the need for the worker to understand the relationship between the biotic and the abiotic, the cognitive, evaluative, attitudinal and behavioral aspects, to achieve awareness, perception and environmental sensitivity that allows them to generate alternative solutions to environmental problems that arise as a result of the application of the technological work methods used during production and services, which contribute to the care, conservation and therefore to the sustainable development of the Environment that characterizes their job, the locality and society in a general sense.

## Scientific-technological, training (pedagogical, didactic, teaching, educational) and management training

Expressed in:

- Possess knowledge and skills (know-how) for the application of the technological work methods of their profession, specialty or trade with a polyvalent nature (worker functions); that is, that allows them to perform with quality, commitment, in an efficient, flexible, temporary manner and due to productive or service needs in a job position other than the one that normally corresponds to them in the labor entity and that demonstrates abilities to transfer the methods of technological work that masters the use of new technologies, as well as the deployment of their professional mobility (either functional or geographical).
- Use scientific research to generate innovative alternatives for continuous and systematic improvement of the technological work methods used, as well as solutions to professional problems that achieve favorable social, educational, economic, energy, environmental and technological impacts, for social benefit.
- Use that part of computing that is related to your professional work object as a work tool, a teaching medium and as a learning object.
- Demonstrate knowledge and skills associated with the scientific management of labor entities at any management level with leadership, creativity, humanism, entrepreneurship, commitment and technological innovation.

It is the expression of the fulfillment of the main functions of the worker: productive or service function (technological, technical,

assistance, non-formative), formative function (involves teaching, educational, pedagogical and didactic) and management function (administrative, managerial).

**General and comprehensive basic training**

Expresses an adequate command of basic and humanistic sciences, communication skills (speaking, listening, writing, reading) in their native language and in another language, professional values (industriousness, responsibility, organization, technological discipline, humanism, professional ethics, commitment, among others), that allow them to know how to be and coexist in an always complex and changing work and social environment, they must also be an entrepreneur, know how to work in multidisciplinary teams, show leadership in their work group and be versatile.

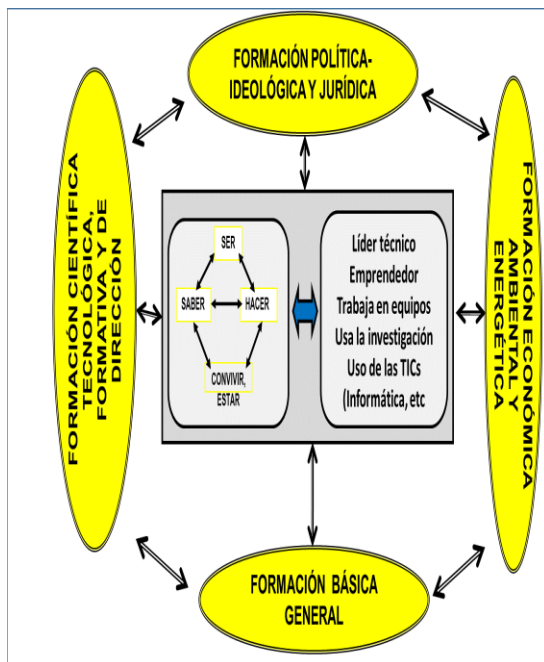Figure 1 summarizes the generic model of competent worker



**Fig.1-** Generic model of competent worker

That is why a procedure is proposed below for the training of the competent worker by carrying out professional learning tasks.

**Procedure for the development of professional learning tasks for the training of the competent worker**

The development procedure of the professional learning task, which contributes to the formation of a competent worker, is determined through a group of actions:

1. Determine the professional problem that the student will solve.

It is specified, within the professional problems that characterize the profession, specialty or trade, which of them solves in its entirety, partially solves or collaborates in its solution, depending on the type of subject (basic, specific basic or specific specific to the profession).

2. Model the training objective.

The training objective (learning outcome) that the student must achieve to provide a solution (total or partial) to the professional problem is modeled, which must be made up of:

- The ability (what are the students going to do?).
- Knowledge (what will students know?).
- The level of depth (how far will they know?).
- The level of systematicity (in what logical order will they know how to do it?).
- Educational intentionality (what values or pillars of the competent worker are going to be developed?).

All these components of the objective must be directed towards the achievement of a professional learning outcome, in line with

the competent worker model and the nature of the professional problem.

3. Model the learning object content with a professional approach

The content that will be the object of professionalized learning is the expression of the integration of the content of the subject with the content that distinguishes the socio-labour demands of the job of the labor entity, associated with the object of the profession, specialty or trade with a current vision. and prospective. This must contribute to developing the pillars that characterize the competent worker according to the proposed model.

4. Design the professional learning problem situation

According to the nature of the professionalized content, the psycho-pedagogical characteristics of the students and the creativity of the teacher, tutor and production and services specialist, the learning activity that the student will carry out in the task is conceived, taking into account the following premises:

- Integration between the academic component (teaching) with the labor (pre-professional, labor practice, education at work, socio-labour demands of the job), investigative (research work and technological innovation) and extension (cultural, community work).
- Stimulation to the meaning and meaning of the content for professional training.
- Treatment of autonomy, teamwork, entrepreneurship, the use of research, Information Technology and Communications (ICT) (interactivity) and professional creativity.
- Promote the transition from appropriation to the application of the

content to solve (totally or partially) the professional problem (work at levels of application and creative assimilation).
- Treatment of the relationship instruction-education-professional growth.

It must be achieved that the student develops knowledge, professional skills and values associated with the model of the competent worker, according to the logic suggested in figure 2.
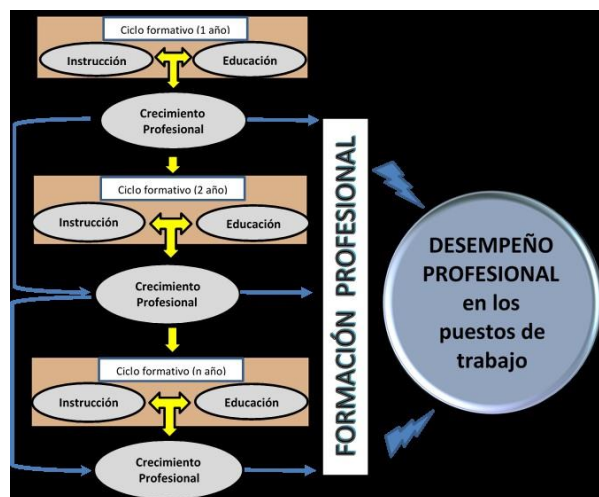


**Fig. 2-** Treatment of the relationship instruction-education-professional growth

As can be seen in the figure, according to the training cycle, in this case, for years of study, the worker in initial training (student) in the first year receives an instruction in which he appropriates knowledge and develops professional skills associated with the subjects. and other work and research activities conceived in the curriculum (study plan) for the first year. Together with them, it is educated in professional values: economic, political, environmental, energy education, entrepreneurship, leadership, teamwork, among others, alternating teaching with job placement, research and extension. Once the year of study is completed, you must achieve professional

growth as a result of the instructional and educational actions carried out by the agents involved: teachers, tutors, specialists, family members and members of the community.

The professional growth achieved in the first year allows us to connote the state of professional training that he begins to achieve during his training process and demonstrate it through his professional performance in the jobs of production and service entities, which allows his advance to the second year of the university degree, specialty or trade that you study.

Already in the second year, instructive and educational actions are developed again; this time in line with the subjects and activities for job placement and research designed for the second year in the curriculum (study plan) in alternate periods. Once the second year is over, a new professional growth must be manifested as an effect of the instructive and educational actions carried out by the agents involved and, so on, the cycle is repeated according to the study plan.

This didactic conception of teaching-learning is also valid at the subject syllabus level, in which the training cycles are developed at the unit level (1, 2, 3,) and the same conception outlined in figure 1 is repeated.

It must also be systematized during the processes of technical training, professional improvement, training, job training, in which the training cycles would be the generalizing units or thematic axes that are conceived in said programs for the continuous training of the worker.

Throughout this conception, a dynamic of professional training must be systematized in which teaching (class) alternates with the modalities or forms of labor insertion (education at work, labor practice, pre-professional, labor training) and research, which are conceived in the initial or continuous training of the worker.

From each of them, the instruction-education-professional growth relationship is systematized in a dynamic that alternates teaching-labor insertion-research and returns to teaching again.

5. Apply the methods and means of professional learning during the forms of organization of teaching and labor insertion.

Systematizing the technological work method-teaching method, it is recommended to use the following methods:

**Collaborative dialogical method of appropriation of content of the profession**

It expresses the way, the way to be followed by teachers and apprentices to ensure that the latter take ownership of the content of the profession, through the development of problematic questions that promote problematizing, reflective-regulated dialogue, exchange, debate and heuristic socialization in teamwork (cooperative) with the use of ICT or other means existing in the context.

The external aspect is appreciated in the relationships that the process adopts between the teacher, the tutor and the specialist in a cooperative (not frontal) manner with the students; that is, in the form of panels, circular, T, by duos, trios, through which, jointly, they build the content through the generation of answers to problematic questions graduated by levels of complexity that link the content with the work object of the profession, specialty or trade.

The internal structure is revealed in the singularity of its system of procedures that will allow the appropriation of the content in connection with the profession, specialty or trade, through the response to questions or professional problematic situations from the collaborative reflective dialogue and heuristic

socialization through work. in teams, with the use of ICT or other means existing in the context.

The teacher, tutor and specialist will establish a dialogue with the worker in initial or continuous training through orientation, debate and heuristic socialization of problematic questions that promote collaborative work (in teams) and inquiry (investigation) about the content they learn to that assesses its usefulness in solving professional problems and in meeting the socio-labour demands of the jobs associated with the profession, specialty or trade they are studying.

This method, in its internal structure, is formed by the following system of procedures:

• Procedure for formulating problematic questions

Problematic questions will be formulated with a logical sequence for the treatment of the content that is the object of deepening, which integrates the instructive (professional knowledge and skills) with the educational (professional values) and achieves the link of the content with the object of work of the profession, specialty or job.

The problematic questions should enable the student to appropriate the contents established by the operations of the technological work method, whether at a general basic, basic professional or specific level.

• Heuristic socialization procedure

In this procedure, teachers, tutors and specialists can transmit, expose the content with the use of ICT by explaining and interpreting its meanings in connection with the profession. On this basis, a professional debate should be fundamentally promoted through the answers to the problematic questions formulated, which make it possible to establish a reflective dialogue through teamwork (collaborative), which encourages the search, the inquiry through research methods, as well as the increase of the tension and the intellectual efforts of the worker in initial or continuous training (students).

In these debates, an exchange should be made about whether the technological operations and steps provided for in the technological work method contribute to solving the professional problem, whether they guarantee compliance with the rest of the socio-labour demands of the job, as well as the meaning and professional sense content, subject or discipline in their professional training.

• Procedure for evaluating the professional growth of the worker (student or graduate).

Finally, it will be necessary, through self-evaluation (the student issues his criteria), peer evaluation (one student evaluates another) and hetero-evaluation (the one carried out by the specialist on the student), to assess the professional growth that the students have achieved (workers in initial training or continuous).

This method is very useful to apply in classes of new content (conferences) and content deepening (seminars).

## Autonomous and interactive professional method of content appropriation

It expresses the structure, path and logic to follow for the appropriation of the content of the profession through the design, implementation and evaluation of projects at an application and creative level, alternating teaching, job placement, research work and technological innovation. and community (link between the academic, labor, research and extension component), based on the

instruction-education-professional growth unit.

This method is very useful in practical classes (exercising content), workshops and in practical teaching classes (contexts of production and services).

On the other hand, it presents the following singularities (new):

- Systematizes the teaching-learning approach based on projects, taking into account the relationship instruction-education-professional growth.
- The appropriation of the content of the profession is achieved at the assimilation, productive (application) and creative levels through the design, implementation and evaluation of projects that integrate a system of tasks (teachers or professionals) that are linked in a basic or direct way with the operations and steps that characterize the technological work method; this, in alternating periods by professional training cycles and with the help of material (ICT or other means) and human resources (teachers, tutors, specialists, students) existing in the institutional, university and labor context.
- Recognizes the interactive nature of the appropriation of the content of the profession through:

- The use of virtual environments to support teaching, chats, interactive discussion forums, Moodle, among others, with the use of existing computer resources and media.

Socio-professional interaction, contextualized, between the agents involved in the process: teacher, specialist, tutors, family, members of the work group, workers in initial or continuing training.

- The use of scientific research methods associated with technological innovation in connection with technological work methods.

- Recognizes the autonomous nature of professional learning, which is based on the need for the worker in initial training (student) or continuous in direct interactivity with their peers, the teacher, specialist, tutor, appropriates and applies gradually and progressively the contents of the profession, through the versatility of its professional performance, according to the logic suggested in figure 8 in the solution of professional problems, based on the meanings, senses and professional experiences that are individually acquired during the teaching, job placement, research and community work (extension).

The external aspect of this method can be appreciated in the relationships that the process adopts between the teacher, the tutor, the specialist and the worker in initial or continuous training, during the performance of tasks and projects; but in a different dynamic, which is expressed in interrelating and harmonizing the forms of organization of teaching (conferences or new content, practical classes or content exercise, seminars or content deepening, workshops, practical teaching class) with the forms organization of labor insertion (concentrated, pre-professional work experience, job training, on-the-job education, among others) and research work and technological innovation in alternating periods by professional training cycles.

In this way, it is possible to integrate knowledge, skills and values during the appropriation of the contents of the profession that must be applied autonomously and interactively, to solve professional problems (including other non-predetermined ones), related to the object of work of their profession. in the work context.

The internal structure is revealed in the singularity of its system of procedures, which make possible the appropriation of the content of the profession. On the other hand, it activates the logical processes of investigative thought, autonomy and professional creativity in carrying out tasks and projects, favors their motivation through the meaning and professional sense that it gives to the solution of professional problems, through the application of the content that learns in its various solution alternatives.

It is structured in the following fundamental procedures:

The teacher:

- Orient a problematic situation in a specific object or process.
- Design learning tasks that guide the student to identify the problem, determine the solution path and solve it.
- Guide learning tasks promoting independent work in teams or individually.
- Promote debates and exchanges of experiences through socialization with their students regarding the identified problem, the solutions offered and the solutions proposed by the students.
- Assess your results through self-assessment and peer-assessment.

The student:

- Understand the problematic situation raised by the teacher.
- Identify the problem and its causes.
- Generate innovative solution alternatives.
- Base the proposal of said alternatives through a reflexive-argumentative and logical-interpretative reasoning, from the economic, environmental,

productive and socially useful point of view.
- Work in teams and develop the capacity for entrepreneurship, teamwork, leadership and being creative.
- Use information technology and investigative methods.
- Exchange and discuss with the teacher the solution to the problem posed in the learning task, according to the path found by him.
- He evaluates himself and his peers according to the successes and failures identified in the solution of the learning task.

Based on these methods, the group of teachers, tutors and specialists of each discipline or subject (whether general, basic professional or specific professional training) is suggested according to the nature of its contents and the graduate profile of the profession, specialty or trade to which they respond, proceed to design professional teaching-learning methods with a singular character, taking into account the model of competent worker. It is important to remember in this sense that the figures are not rigid; that is, they offer a general orientation, which will be used flexibly according to the characteristics of each discipline or area of basic and professional training.

It is also intended to ponder the creativity that, in this sense, teachers, tutors and specialists must achieve to systematize the regularity of the technological work method-professional teaching-learning method, without losing sight of the theoretical approaches and assumptions addressed in this section. In the next chapters the themes of objectives, contents, tasks and projects will be studied to gain a better understanding of this approach.

As support to the methods that are used to implement the task during the class or the

labor insertion in the productive or service entities, teaching-learning means must be used.

All the procedures carried out by the teacher, the student, the tutor and the specialist must be in line with the model of a competent worker provided in Figure 1.

In this sense, it is recommended to use teaching aids such as: real objects (means of production and services), pictures, models, teaching materials, books, tablets, catalogs, computing (Moodle, internet, chats, application systems ) . : Word, Excel, PowerPoint, educational software), didactic videos, the use of the potential of smart mobiles (cell phones with Android or Iphone systems ), among others existing in the educational institution and the work context, which allow interactive learning.

6. Specify the indicators for the evaluation of learning results

The teacher will adjust this part in accordance with the expected learning results and the evaluation system established according to the subject program in question and the pillars that characterize the competent worker (figure 1).

7. Guide the bibliography to the student

It constitutes a fundamental component of the task, in which the student is oriented to the basic and complementary bibliography that he can use for its realization, which must be as updated and contextualized as possible, without losing sight of guiding him to the search and updating of new bibliographies through the use of ICT (internet), virtual classrooms, which allow the updating and enrichment of the study material base.

Figure 3 summarizes the procedure provided for the development of professional learning tasks aimed at training a competent worker.
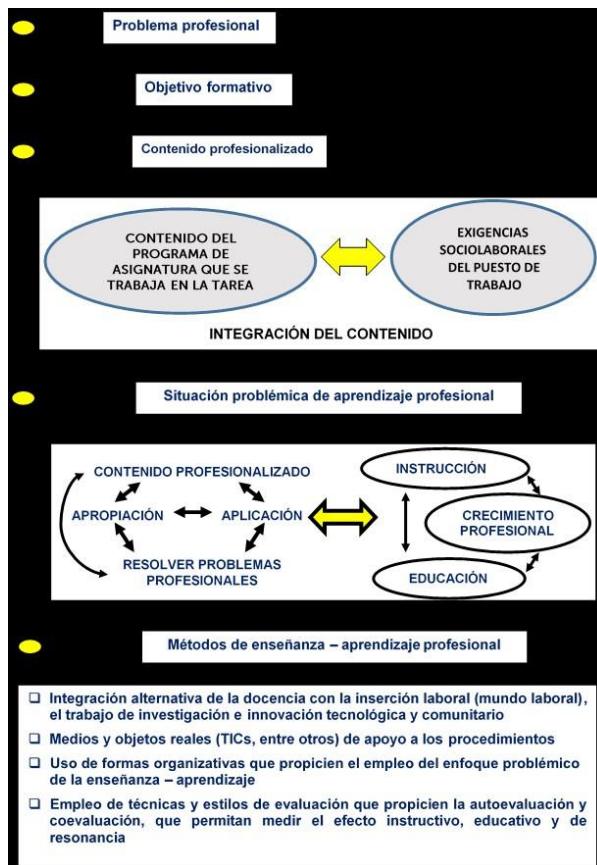


**Fig. 3-** Representation of the development procedure of professional learning tasks for the training of a competent worker

**Pre-experiment. Obtained result**

pre-experiment was carried out in a sample of 30 high school students in Industrial Mechanics from the "Luis de Feria Garayalde" Polytechnic School, which is located in the Improvement of the Cuban Educational System, using purposive sampling.

Methodological workshops were held with teachers who work with the specialty, who were trained in the application of the procedure.

Subsequently, professional learning tasks were designed in the Fundamentals of Technological Processes subject and applied during the duration of the program.

The following table shows a comparison of the learning results achieved by the students, before and after applying the procedure, to verify how they influenced the formation of a competent worker.

Delahoz, EJ and De la Hoz (2022), as well as Alonso, Cruz and Ronquillo (2022) were drawn up.

The professional learning task contributes to the formation of a competent worker in an excellent way, when it was possible to apply between 90.0% and 100.0% of the requirements established for its development, according to the procedure provided.

The professional learning task contributes to the formation of a competent worker in a good way, when it was possible to apply between 80.0% and 89.0% of the requirements established for its development according to the procedure provided.

The professional learning task contributes to the training of a competent worker on a regular basis, when it was possible to apply between 70.0% and 79.0% of the requirements established for its development, according to the procedure provided.

It is considered deficient when it does not reach the category of regular.

The observation of the learning results, before and after applying the procedure, derived the result shown in the following table.

**Table 1-** Influence of professional learning tasks in the training of a competent worker before and after implementing the procedure

| Influence of professional learning tasks in the formation of a competent worker | Before applying the procedure | | After applying the procedure | |
|---|---|---|---|---|
| | Qty | % | Qty | % |
| Excellent | 3 | 10.0 | 19 | 64.0 |
| Good | 6 | 20.0 | 9 | 30.0 |
| Regular | 17 | 57.0 | 2 | 6.0 |
| Deficient | 4 | 13.0 | 0 | 0.0 |
| Total | 30 | 100.0 | 30 | 100.0 |

No.=30

$p(X^2) = 0.001 < á (0.05)$: Statistically significant differences

To assess whether the differences in the data shown in Table 1 were significant, the Chi-square test ($X^2$) was applied.

A 95.0% confidence level was used, recommended for educational sciences, assuming a degree of reliability of á=0.05. The following working hypotheses were drawn up.

Nullity hypothesis ($H_0$): the professional learning tasks applied in the subject Fundamentals of Technological Processes, before and after applying the procedure, do not significantly influence the formation of a competent worker.

Alternative hypothesis ($H_1$): the professional learning tasks applied in the subject Fundamentals of Technological Processes, after applying the procedure, significantly influence the formation of a competent worker.

($X^2$)= 0.001 was obtained, which is below the degree of reliability assumed, which is 0.05; that is to say: p ($X^2$) = 0.001 < 0.05, so $H_1$ is accepted and Ho is rejected.

This result shows that the differences in the data obtained are significant; that is, it is inferred that the application of the professional learning task development procedure significantly influences the training of a competent worker.

## DISCUSSION

For Álvarez (1999) the teaching task is: "(...) the action that, in response to certain objectives, is carried out under certain conditions (...) is the action of the teacher and the students within the process that is carried out in a certain pedagogical circumstance with the aim of to achieve an objective of an elementary nature: to solve problems posed by the teacher" (p. 101).

Machado (2006) maintains that the task "is that process that is carried out in certain pedagogical circumstances, in order to achieve an objective; that is, it is the action that is developed according to the conditions and that contains both the inducer and the executor. "(p. 4).

Authors such as Silvestre and Zilberstein (2002) consider teaching tasks "(...) as those activities that are oriented so that the student can carry them out in class or outside of it, imply the search and acquisition of knowledge, the development of skills and the integral formation of the personality" (p. 34).

According to López (2004), professional tasks "are the actions carried out by the professional in training to solve problems that require the integration of objectives, contents and methods to favor their work performance" (p. 18).

Quijije and López (2016) consider that:

> The class, which constitutes the organization of the

teaching-learning process, establishes the process aimed at achieving the professional training of the student, through the selection and didactic structuring of the objectives, contents, methods, means, forms to be used, as well as techniques and evaluative instruments to verify the achievement of the objectives. Therefore, it is understood that the teaching task is a learning situation that the teacher develops, and is supported by the conditions provided by the professional work process itself (p. 183).

Ortiz (2017) reflects that learning tasks "are those that promote in students an action aimed at autonomously and consciously building a cognitive and instrumental repertoire (...)" (p. 51).

Sánchez, Campos and Machado (2018) make the following reflection:

> The teaching tasks respond to the graduation of objectives in the teaching levels, they have an intentionality. Tasks can be conceived for motivation, treatment of new content, for consolidation, work with previous knowledge, with the guiding base for the socialization of ideas, in the elaboration of definitions and concepts, in control, diagnosis, teamwork, development of oral expression, self-assessment, among other aspects. On the other hand, it is valid to highlight that the teaching task is conceived both to be carried out in the classroom and outside of it, always with

the intention of developing knowledge (p. 3).

On the other hand, Sánchez, Campos and Machado (2018) state that the teaching task "is a problematic learning situation of increasing level of complexity, supported by the integral diagnosis as a tool for the potential development of the student, (...); which expresses the dialectical unity between the objective and the method, instrumented in self-regulation" (p. 5).

From the diversity of criteria and interpretations, they make it possible to define that the professional learning task is one: situation or problematic question of professional learning conceived from the unity between the instructional and the educational, aimed at the appropriation of the content of the profession in a dynamic that it integrates the academy (teaching) with the socio-labour demands of the jobs (labour insertion) and scientific research work, whose purpose is the professional growth of the worker in initial or continuous training.

The professional situation or problematic question that is conceived in the professional task must meet the requirements on the regularity of the technological work method-professional teaching-learning method.

The professional learning task must promote the professional growth of the worker in initial or continuous training, according to the level for which it has been conceived. That is why the following requirements proposed by Bermúdez and Pérez (2015) for the teacher and the student must be taken into account during the performance of professional teaching tasks. They are the following:

- Authenticity, empathic understanding and acceptance and unconditional respect for the other.

Bermúdez and Pérez (2015) consider that:

Authenticity implies establishing a real and authentic relationship, without inconsistencies between what is thought, felt, said and done. This is an essential condition for the other to be frank, sincere and authentic. Empathic understanding, that is, the ability to put oneself in the other's place, consists in understanding how they think and feel and expressing to them what has been understood about what is happening to them and their inner world. Unconditional acceptance and respect for the other requires accepting him as he is, showing him affection, esteem and respect, regardless of how different he is and how he would like it to be. It means admitting it, taking it into account, recognizing it as a person and trusting it (p. 18).

Commitment to change and Personal Growth in the specific historical-social conditions in which the educational practice takes place.

Bermúdez and Pérez (2015) reflect in this sense that "raising awareness of educational change is not enough, it is necessary to commit to the application of actions that promote said change and with it the transformations of the students, the group and the teacher himself. " (p.19).

- New style of the teacher and the student in facilitating the learning process.

In this regard, Bermúdez and Pérez (2015) consider using "a cooperative style, in which collaboration is encouraged, in terms of negotiation between the teacher and the students, in which both satisfy their needs and decide what they want to achieve and

the way of doing it, jointly, trying to reconcile them with institutional and social demands" (p. 20).

On the cooperative style, Bermúdez and Pérez (2015) reflect that:

> It eliminates all kinds of authoritarian, top-down and rigid positions, centralization and a single decision and, although it focuses on the needs of students, it does not imply "letting go" or group anarchy; on the contrary, it requires the group to behave in accordance with the previously defined goals and tasks. It is not a matter of asking for an opinion and giving students participation, but rather that they *prepare and decide the projects and the way to achieve and evaluate them,* within the limits imposed by the time, society, the school institution, the year that they are studying. the student and the subject in question (p. 21).

The elaboration and decision process is conducted by the teacher through the teaching task, who has to prepare the group to be able to participate and decide. He can give personal elements and criteria, even proposals, but he must carefully choose the moment and the way to offer them, so that his opinion does not determine group decisions.

The student becomes an active subject and committed to the process and result of their learning and professional growth. It demands their participation in all the decisions inherent to these processes, participates in a conscious and transformative way, with all their personological resources, in the achievement of individual and group goals, and is responsible for the results achieved.

All of the above is expressed to the extent that the teacher, tutor, specialist carry out an accurate methodological systematization of the instruction-education relationship and professional growth, based on the use of the educational potential of the content object of appropriation gradually and reflexive-regulated.

The professional learning task, unlike the studies carried out by the authors cited in the introduction to the work, presents the following characteristics:

- It is based on the use of problematic learning methods through the creation of questions or professional problematic situations, according to requirements established for such purposes.
- Systematizes the instruction-education-professional growth unit.
- It has to be conceived based on the training objective and the professionalized content that is the object of appropriation by the worker in initial or continuous training.
- It is aimed at the appropriation of the professionalized content by the worker in initial or continuous training in a dynamic that integrates the forms of organization of teaching with labor insertion and research work and technological innovation.
- It must be conceived as a system, from the simple to the complex.
- It must allow the worker in initial or continuous training to assess the meaning and sense that the content they learn has for their professional training and for life in a general sense.
- It should stimulate research, the use of information technology (ICT) and the permanent search for content to apply it in the solution of professional

problems and during the fulfillment of the socio-labour demands of the job of the labor entity.

- It must present demands that stimulate intellectual development (logical thinking), the assessment of revealed knowledge and the activity itself, through exercises and situations where the student applies the knowledge learned to the solution of professional problems, which leads to professional growth.
- It must respond to the educational needs of students (diagnosis), all of which will be revealed in its formulation and control. These needs to which it will respond must be in correspondence with the qualities and values to be developed in the training objective.
- It must, in its requirements (conception), give curricular output to the pillars that characterize a competent worker (figure 1).

In the professional teaching task, the objective is to favor the protagonism of the worker in initial training (student) or continuous in the active search of the content of the profession. In addition to offering procedures, it is necessary to make them aware of how their professional learning takes place, that is, how their mental processes operate to learn, for which it is effective to develop their autonomy and professional creativity, to reflect individually and work in teams on how they proceeded to solve it and for self-control.

The socialization that occurs through the performance of professional teaching tasks is the way to control the resolution of tasks and how each worker in initial or continuous training operates to understand, execute, self-control their result and proceed, can favor that everyone reflects on the particular strategy in the same situation. In the same way, you can incorporate what gave another good result to improve your individual behavior, fundamentally and contributes to

orient yourself well before executing and self-control each action.

It also favors realizing that when faced with the same task there may be different procedures and results that alert that it can be dealt with in a differentiated manner in autonomous work. The consideration that the worker in initial or continuous training makes about what the task he solves is useful for, is a way of constant reflection to relate the contents, procedures with the labor and community context.

Hence, the study carried out coincides with the approaches addressed by the aforementioned authors and cited in the introduction of the work, but with the singularity of being aimed at training a competent worker according to the generic model provided in figure 1.

It is concluded that the professional learning task is the fundamental cell of the initial and continuous training process of the workers, since it bases a dynamic of appropriation of contents alternating teaching with labor insertion, research work and treatment to the unit. instruction, education and professional growth of the worker.

The procedure for developing professional learning tasks for the training of a competent worker offers a logical path to follow that allows systematizing the professional didactic approach to teaching-learning; that is, it links the didactic components of the task in connection with the demands of the jobs in which the worker performs from the link between the academic component with the labor and research component.

The pedagogical pre-experiment applied in the subject Fundamentals of Technological Processes to the students of intermediate technician in Industrial Mechanics allowed us to verify, by means of the Chi-square statistician (X2) that, with the application of the procedure, the development was

significantly improved. of professional learning tasks carried out by the students, which contributed to their training as more competent workers, allowing to verify their relevance and feasibility.

## BIBLIOGRAPHIC REFERENCES

Alonso, L. A., Cruz, M. A. y Ronquillo, L. E. (2022). *Enseñanza aprendizaje profesional para formar trabajadores competentes*. Libro Mundo. https://editoriallibromundo.wordpress.com/editorial-libro-mundo/colecciones/educacion-contemporanea/ensenanza-aprendizaje-profesional-para-formar-trabajadores-competentes/

Alonso, L. A., Ortiz, A. L. Cruz, M. A. (2021). Método de aprendizaje profesional basado en proyectos para la formación de los trabajadores. *Revista de Investigaciones Andina, 22*(1). http://revia.areandina.edu.co/index.php/IA/article/view/1832/1739

Alonso, L. A.; Cruz, M. A., Olaya, J. (2020). Dimensiones del proceso de enseñanza aprendizaje para la formación profesional. *Revista Luz, 19*(2), 17-29 http://luz.uho.edu.cu/index.php/luz/article/view/1032

Álvarez, C. (1999). *La Escuela en la Vida (Didáctica*). Recuperado de: https://www.conetadel.org

Ballesteros, V. A. (2020). Una aproximación inicial a los resultados de aprendizaje en educación superior. *Revista científica 2*(39), 259-261. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0124-22532020000300259

Bermúdez, R. y Pérez (2015). Pedagogía de la ETP. La Habana, Cuba: Pueblo y Educación.

Fontalvo, J., Delahoz, E. J. y De la Hoz, G. (2022). Resultados de aprendizaje y mecanismos de evaluación en los programas académicos de educación superior en Colombia. *Revista Formación Universitaria, 15*(1), 105-114. https://dx.doi.org/10.4067/S0718-006202200010010

Guzmán, R., Brito, Y. y Fonseca, Y. (2019). Variantes didáctico-metodológica para la dirección del aprendizaje técnico- profesional en el contexto de la relación politécnico empresa. https://www.pedagogia.edu.ec

Hernández R., Fernández, C. y Baptista, P. (2014): *Metodología de la investigación*. (5ta Ed.) México: EDAMSA IMPRESIONES S.A. de C.V. Recuperado de: http://www.esup.edu.pe/descargas/dep_investigacion/Metodologia%20de%20la%20investigaci%C3%B3n%205ta%20Edici%C3%B3n.pdf

Meneses, O. y Gutiérrez, A. (2016). La evaluación del aprendizaje: nuevas tendencias y retos para el profesor. *Revista EDUMECENTRO, 8*(4), 191-205. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2077-28742016000700014&lng=es&tlng=es

Ortiz, A. (2017). Metodología del aprendizaje significativo, problémico y desarrollador. Hacia una Didáctica Integradora y Vivencial. España: Editorial Académica Universitaria.

Porta N. S., Tarrió, C. (2019). La capacitación para el desempeño laboral de los trabajadores productivos. *Revista Pedagogía Profesional*, *17*(1). https://revistas.ucpejv.edu.cu/index.php /rPProf/article/view/752

Quijije, P. y López, L. (2016). Tareas y competencias didácticas profesionales: reflexiones en las carreras de Ingeniería Comercial e Ingeniería en Sistemas de la Universidad Laica Eloy Alfaro de Manabí. *Revista Did@scalia: Didáctica y Educación, VII*(2). 181-192. https://dialnet.unirioja.es/servlet/articulo?codigo=6644652

Sánchez, I. (2013). Tarea de aprendizaje interdisciplinaria: una alternativa en la formación del profesor de Biología-Geografía. *Revista Conrado* [seriada en línea], 10(43). pp. 31 -37. Recuperado de http://conrado.ucf.edu.cu/

Sánchez, Y. P., Campos, L. y Machado, D. (2018). Concepción didáctica de la tarea docente desarrolladora. *Revista Formación y Calidad Educativa (REFCalE), 6*(1), 1-16. https://refcale.uleam.edu.ec/index.php/refcale/article/view/1310

Silvestre, M. y Zilbersteins, J. (2002). *Hacia una didáctica desarrolladora.* La Habana: Pueblo y Educación.

Vidal, A. y Castillo, R. (2019). Formación de estudiantes de Medicina como tutores pares en aprendizaje basado en problemas. *Revista de Educación Médica Superior, 33*(3). http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864 -21412019000300010&lng=es&tlng=es

**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.

**Quote as**
Alonso Betancourt, LA, Aguilar Hernandez, V. & Cruz Cabezas, MA (2023). The task of professional learning for the formation of a competent worker. *Mendive. Revista de Educación, 21*(3), e3229.
https://mendive.upr.edu.cu/index.php/MendiveUPR/article/view/3229