ISSN: 2310-340X | RNPS: 2349 | COODES Vol. 12 No. 3 e726 (September-December)
Ramos Grandal, M. L.; Aguilar Aguilera, M. J.; Travieso Peña, C.; González Reyes, G.; Cardero Barquilla, Y. "Municipal public innovation laboratories. Procedure for their implementation"
Available at: https://coodes.upr.edu.cu/index.php/coodes/article/view/726

2024

Original article

Municipal public innovation laboratories. Procedure for their implementation

Laboratorios de innovación pública municipal. Procedimiento para su implementación

Laboratórios públicos municipais de inovação. Procedimento para sua implementação

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Received: 20/03/2024
Accepted: 1/11/2024

ABSTRACT

This article is the result of the implementation of a municipal public innovation laboratory in the municipality of Bahía Honda, Artemisa province. It responds to the preparation of managers and citizens in science and innovation in the co-creation of solutions to common problems, as a participatory, scientific and sustainable way. Its creation responds to the needs of Cuba's social economic development. Its objective is to propose a procedure for its implementation in Cuban municipalities. For the work with theory, the methods of Analysis-Synthesis, Induction-Deduction and Modeling were used to arrive at theoretical conclusions for the design of the contextualized procedure. For the diagnosis and transformation of the practice, the following methods were used: Documentary Analysis, Interview, Participant Observation, Expert Criteria and Triangulation. The article defines the laboratory with its function and explains the eleven steps that make up the four stages of the procedure. The laboratories constitute spaces to promote a culture of innovation and

in them there is a construction of knowledge and learning that becomes preparation for managers and citizens. The proposed procedure is dialectic, participatory, strategic and scientific; applicable to different contexts in the country.

Keywords: innovation; laboratories; procedure.

RESUMEN

El artículo que se presenta es resultado de la implementación de un laboratorio de innovación pública municipal en el municipio de Bahía Honda, provincia Artemisa. Responde a la preparación de directivos y a la ciudadanía en ciencia e innovación en la co-creación de soluciones a problemas comunes, como una vía participativa, científica y sostenible. Su creación responde a las necesidades del desarrollo económico social de Cuba. Su objetivo es proponer un procedimiento para su implementación en los municipios cubanos. Para el trabajo con la teoría, se emplearon los métodos de Análisis-Síntesis, Inducción-Deducción y la Modelación que permitieron arribar a conclusiones teóricas para el diseño del procedimiento contextualizado. Para el diagnóstico y la transformación de la práctica, se emplearon los métodos: Análisis documental, la Entrevista, la Observación participante, el Criterio de expertos y la Triangulación. En el artículo se define el laboratorio con su función y se explican los once pasos que conforman las cuatro etapas del procedimiento. Los laboratorios constituyen espacios para promover una cultura de innovación y en ellos se produce una construcción de saberes y aprendizajes que deviene en preparación para directivos y la ciudadanía. El procedimiento propuesto tiene carácter dialéctico, participativo, estratégico y científico; aplicable a diferentes contextos del país.

Palabras clave: innovación; laboratorios; procedimiento.

RESUMO

Este artigo é o resultado da implementação de um laboratório público municipal de inovação no município de Bahía Honda, província de Artemisa. Ele responde à preparação de gerentes e cidadãos em ciência e inovação na co-criação de soluções para problemas comuns, de forma participativa, científica e sustentável. Sua criação responde às necessidades do desenvolvimento social e econômico de Cuba. Seu objetivo é propor um procedimento para sua implementação nos municípios

cubanos. Para o trabalho com a teoria, foram utilizados os métodos de Análise-Síntese, Indução-Dedução e Modelagem para chegar a conclusões teóricas para o projeto do procedimento contextualizado. Para o diagnóstico e a transformação da prática, foram utilizados os seguintes métodos: análise documental, entrevista, observação participante, julgamento de especialistas e triangulação. O artigo define o laboratório com sua função e explica as onze etapas que compõem os quatro estágios do procedimento. Os laboratórios constituem espaços para a promoção de uma cultura de inovação e neles ocorre a construção do conhecimento e do aprendizado, o que resulta na preparação de gestores e cidadãos. O procedimento proposto é dialético, participativo, estratégico e científico, aplicável a diferentes contextos do país.

Palavras-chave: inovação; laboratórios; procedimento.

INTRODUCTION

The accelerated development of science and technology, with emphasis on information technologies and the worsening of existing crises in the world, such as political, economic, health, environmental and others, have turned the current context into a complex, dynamic space, plagued by uncertainties. The training and improvement of the human beings who must develop in this context are also changing as society changes. This vision has led to a greater concern for teaching forms, methods and ways of systematically updating knowledge, interpreting, applying and enriching it than for memorizing its essences. It is a changing society that demands versatile, flexible and dynamic learning that responds to this changing era.

Today, the preparation of Public Administration (PA) managers for the solution of problems that arise at the municipal level and that require innovation to assume the complexity of the context in an integrated manner and to be able to present supportable and sustainable solutions is seen as a necessity. Parallel to this, spaces are required that favor the participation of all in the process of prototyping solutions.

This projection is in line with the 2030 Agenda (Cepal, 2019) and with the Sustainable Development Goals (SDGs) associated with it that favor the promotion of new ways and means to achieve the current vision of sustainable development, with emphasis on goal four, which calls for ensuring inclusive, equitable and quality education for all and goal 11 that seeks to make cities and human

settlements inclusive, safe, resilient and sustainable. From the above it is inferred that the search for solutions to the current complexities requires science and innovation as permanent pillars, according to Galindez and Núñez (2020, p. 45) "it implies aligning interests, raising joint definitions and designing initiatives that recognize the needs and perspectives among different sectors, territories and levels of government".

Latin America shows some experiences with public innovation laboratories, which contribute directly to the improvement of the implementation of social policies that favor government management. These laboratories develop different activities that promote participation, experimentation and the co-creation of solutions to different problems.

In Cuba, science, technology and innovation become engines of change to improve the efficiency results of the PA and thus the welfare of the people.

The above makes it possible to directly relate to two strategic axes of the National Economic and Social Development Plan until 2030 (PCC, 2017): socialist, effective, efficient and socially inclusive government and human potential, science, technology and innovation. Their articulation allows placing them in the foreground in all instances, with a vision that ensures the achievement of the designed objectives in the short and medium term.

The Constitution of the Republic (2019) legitimizes in its Article 21 that "the State promotes the advancement of science, technology and innovation as essential elements for economic and social development" prioritizing those aimed at solving problems that concern the interest of society and the benefit of the people. It also recognizes the principle of municipal autonomy, which calls for the expansion of the decision-making capacity of the municipalities and creates the legal basis for achieving greater results in local development.

In the ideas, concepts and guidelines emanating from the 8th Congress of the Communist Party of Cuba (PCC, 2021, p. 13), it is specified the need to "incorporate as pillars of our work the support in science and innovation for the approach and solution of the most complex issues, as well as the creative development of social communication". As a materialization of the above, the Cuban Council of State assumed Agreement 156 (2021) where it is agreed to create the National Innovation Council, which assists the President of the country in "decisions to promote innovation in the functioning of the State, the Government, the Economy and Society, in a coordinated and integrated manner, which contributes to the vision of the nation...". It is a platform for discussion and exchange of ideas and

perspectives among specialists from different sectors to promote innovation as a path to sustainable development.

At the same time, Decree-Law No. 13/2020 related to the System of Work with State and Government cadres and their reserves states that "cadres apply methods and styles of work that favor cooperation and coordination with political, mass and social organizations with which they are related in the implementation of the Cuban economic and social model of socialist development..." (Consejo de Estado de la República de Cuba, 2020, p. 887).

At the International Congress "Pedagogy 2023" in the conference: "The management of science and innovation in the system of general education in Cuba", Dr. C. Ing. Miguel Díaz-Canel Bermúdez, President of Cuba, stated that: "the implementation of a Government Management System based on science and innovation is based on the need to strengthen the role of the government in promoting science, technology and innovation activities, in close connection with the development process..." (Díaz-Canel Bermúdez, 2023, p. 4).

This study shows that there is an international and national willingness to implement new forms of PA management based on science and innovation at the municipal level, as the level closest to the population. However, observation of the current state of PA management, as well as interviews with mayors and other managers at this level, made it possible to identify some shortcomings that limit government management based on science and innovation. Specifically, the PA of the municipality Bahía Honda has professionals who do not always manage to conceive, develop and control a management system based on science and innovation which are manifested in:

- The expected results are not achieved in the alliances of research centers-economic and civil stakeholders-municipal government for decision making.
- The cadres have not yet been able to perceive technology as an essential support for their actions.
- The actions developed to achieve high levels of equity and social inclusion through participation are still insufficient.
- There is a lack of actions that favor digital communication as a pillar of government.

In this context, contradictions were perceived between the need to implement a management system based on science and innovation in PAs to face current challenges and the shortcomings of the cadres

and managers at the municipal level. How, then, can the preparation of PA cadres to develop a governance system based on science and innovation be strengthened?

Taking into account the complex scenario in which PAs develop and the challenges they must face, the authors consider that laboratories are a way to build the prosperous and sustainable society to which it is aspired from plurality. They are spaces to experiment, to create, to foster collaboration, teamwork, participation and thus find solutions to different problems.

One of the achievements of the Articulated Platform for Integral Territorial Development is the establishment of the first laboratories to monitor the SDGs in four provinces of the country, including Artemisa. This event becomes a precedent and a guide for the implementation of an innovation laboratory that not only promotes innovation, but also harmoniously links this purpose with the fulfillment of the SDGs.

Likewise, a public innovation laboratory of the University of Holguin is identified, which aims to develop learning and creativity to solve common problems or needs of the PA and citizens, simultaneously promoting the use of Information and Communication Technologies to enhance the training and improvement of public servants and citizens in general (Salvador Hernandez & Llanes Font, 2021). This online initiative is an important antecedent for the current proposal, since they share the same field of study, the PA, the main actors and their objectives generally coincide. They differ in the place and in the form of implementation; the proposal is to create it in the municipality in a physical manner, with a structure anchored to the municipal government; to create capacities in the cadres and reserves since they are the ones who lead the processes and although work is done on the creation of computer products and communication, its essence lies in the change of the PA management model towards a horizontal one, with greater participation and based on science and innovation with a municipal scope. In the bibliographic search carried out, the authors did not find procedures for its implementation in Cuba. Other laboratories that constitute antecedents are those located in Argentina (LABgobar), Chile (Laboratorio de gobierno) and Mexico (Laboratorio para la ciudad). The latter is currently closed, but it is the first innovation laboratory in Latin America and the Caribbean and has served as a model for others, which are part of the Ibero-American Network of Innovation Laboratories (Galindez & Núñez, 2020).

The objective of this work is to propose a procedure for the implementation of municipal public innovation laboratories (LIPM) in Cuban municipalities, as a participatory, scientific and sustainable

way with the social use of knowledge and to prepare managers and citizens in science and innovation in the co-creation of solutions to common problems.

Special attention is given to the creation of these spaces, since the more institutionalized the links between experts and decision-makers are, and the more they persist over time, the greater the capacity to anticipate certain events, the greater the possibility of preventing them, mitigating their consequences or, if necessary, developing the capacity to provide effective and efficient responses in time and quality (Wilsdon et al., 2014, cited by Unesco, 2021).

MATERIALS AND METHODS

The proposal is based on the experience lived in the municipality of Bahía Honda, Artemisa Province, where a laboratory was created. It constitutes a scientific result of a research project.

The dialectical-materialistic method was used as a general method of science that allowed observing and analyzing reality for its problematization, going to the theory for the search of possible solutions in theorization, as well as returning to practice to implement these ideas, transform them and evaluate their efficiency in verification. In this logic, research methods of the theoretical level were also used to obtain, analyze and process information: analysis-synthesis and induction-deduction. They allowed the study of new forms of improvement of managers in science and innovation, new trends at the international level and their possibilities of implementation in the country. The modeling allowed the design of a laboratory and its implementation procedure with participatory and dialectical characteristics. At the empirical level, documentary analysis, interviews and participant observation were used to collect information and verify the deficiencies that generated the research. Expert criteria were also used to evaluate the theoretical and practical opinions of the procedure. In the crossing of several sources as part of the triangulation, data were articulated that allowed arriving at conclusions where the information obtained, the theoretical position and that of the researchers were contrasted. All this was done under ethical standards of respect and privacy of the information of the public institutions participating in the research.

RESULTS AND DISCUSSION

The proposed LIPM is defined by Yáñez Figueroa et al. (2021) as an open space for co-creation, communication and collaboration where the scientific, analytical and technological resources and capabilities of an interdisciplinary group of people are placed at the service of improving the quality of life of citizens, institutions and/or their governments, through the use of participatory diagnostic and design methodologies.

Co-creation was added to this definition as a fundamental concept in open innovation. It has become a social ecosystem that unites citizens, communities, PA managers, companies and others in the willingness to open processes that were traditionally closed and share spaces for joint work, through the opening of public data, the intensive use of open innovation, and the invitation to work under models of co-design, co-creation and co-production of services by considering new schemes that make it possible to take advantage of collective intelligence and what has been called *"wisdom of the crowd"* (Surowiecki, 2004, cited by Ramírez Alujas, 2012). Co-creation presupposes:

- The transition from a "haphazard" innovation process to a conscious, ingenious and systematic approach that develops awareness.
- Shift from a focus on human resource management to building innovation capabilities at all levels and as a fundamental axis to be considered in structural issues.
- Moving from the execution of (routine) tasks and projects to "orchestrating" co-creation processes, generating new solutions with citizens, not "for them" but "with them";
- Moving from the mere "administration" of public organizations (under the weight of the operational and routine) to courageously leading innovation in, through and beyond the public sector (Ramírez Alujas, 2012).

Although the conceptions for companies focus on the search for ideas to generate greater income, in the case of the Cuban PA it is centered on the solution of environmental problems with new solutions; it is also a space for preparing participants, especially managers and citizens, for the co-creation of solutions and the development of decision-making skills, which they incorporate into their modes of action as they solve new problems.

It is agreed with Criado et al. (2017) that innovation in PA "is connected to the existence of a new generation of social technologies and large amounts of data that allow the accumulation of collective

intelligence and the development of new formats, such as innovation labs". For these authors, innovation laboratories are hybrid spaces where citizens and public policy makers come together to prototype new solutions and, in this process, methodologies are designed, experiments are conducted and a culture of learning is fostered that is intertwined with innovation in the participants.

Therefore, the LIPM is an innovation ecosystem, as it constitutes a complex system that involves the government, the university and the state business and private sector, as well as users, consumers, clients, non-governmental organizations and other grassroots actors. Its main function is to make use of potentially useful but unused knowledge to generate solutions to public problems, train and disseminate valuable knowledge for sustainable development, in the context of the municipality's strategic lines. It is a physical and virtual space that, based on local governance, promotes greater citizen participation in the generation of solutions, assuming this participation as the active and conscious involvement of citizens in public decision-making processes, taking into account that decision-making is the essential manifestation of the exercise of political power.

This learning process becomes training and improvement of PA managers and citizens. It is characterized by being systematic, scientific, contextualized and differentiated, based on the issues to be addressed and those involved in the analysis. It is a preparation oriented to the demands and complexities of the environment, where a new scenario is combined with a new operating scheme for the search for solutions and a participatory, innovative and transparent management style.

How to implement a LIPM in a Cuban municipality?

Koontz et al. (2012) after the analysis of several definitions of procedure, define it as the chronological succession of operations, which always indicate a sequence of the order in which they must be executed and the way they are done, i.e., the degree of specificity will determine the denomination of the set of steps that have to be performed to carry out an objective.

According to the Dictionary of the Royal Academy of the Spanish Language (2023), a procedure is "the action of proceeding, the method of executing some things". A procedure is a set of clear steps (the method) that allows to carry out a task (the way to proceed), it is the way that is followed to execute an action in an efficient way. It is a guide for action that details the exact way in which some activities must be carried out, their sequence and their logic for the fulfillment of a predetermined objective.

The general objective of the proposed procedure is to implement public innovation laboratories in the municipalities.

It encompasses the Municipal Administration, the university and the entities of different subordinations located in the municipality, as well as all the inhabitants of the municipality in question. It consists of 4 stages and 11 steps, where popular participation is present in each one of them (Table 1).

Table 1. Procedure for the implementation of LIPM in the territories.

Stages	Steps
Awareness and diagnosis	1. Awareness-raising actions 2. Application of empirical level scientific instruments 3. Triangulate the information obtained 4. Prioritize the problems that impede implementation 5. Define those directly involved in the implementation
Strategic formulation	6. Design of the LIPM implementation strategy 7. Evaluation of the proposal by expert criteria as a scientific method
Execution	8. Execution of actions for the implementation of the LIPM 9. Training program for public servants
Evaluation and feedback	10. Evaluate the level of efficiency of the previous stages in the implementation 11. Feedback of the procedure in terms of contents, forms, attitudes and values

Source: Own elaboration

The proposal is distinguished by taking advantage of the potentials offered by popular participation for the sensitization of those involved, for the analysis of problem identification and for the logical

application of science with the execution of scientific methods in the process of implementation of innovation laboratories.

Description of the proposed procedure

1. Sensitization and diagnosis stage: Since this is the beginning of the implementation process, it is considered appropriate to have sensitization actions that summon, excite and motivate the different social actors to participate in the implementation of the LIPM. This should not be an imposed task; they should be clear about what is expected of them and, accordingly, what their positions should be. Next, empirical scientific instruments will be applied to collect information on how and where to install a LIPM in each municipality, what advantages and limitations it may have and other aspects to be considered. These instruments will be elaborated and tabulated by the university specialists, who should accompany the administrations in this activity. Here, managers, specialists and other PA officials participate in the application of these instruments. Individual and group interviews, surveys, analysis of proposals from other territories in Cuba and other countries, as well as participant observation can be used. With all this research, the information is triangulated to identify the main problems for the implementation of the LIPM in the territory. It is positive that in addition to this information, the SWOT matrix is used because it facilitates a holistic view of the object and allows combining its components for the adoption of certain actions.

Subsequently, it is proceeded to prioritize the problems that impede the implementation of the Laboratory and define those directly involved, aspects that help to guide the implementation. The following criteria of Crespo Alambarrio (2015) are suggested to prioritize the problems:

1. Magnitude of the problem: indicates the seriousness of the problem and, therefore, the urgency of addressing it, in terms of impact on the implementation of the laboratory.
2. Affected area or zone: physical space that will serve as the basis for further definition.
3. Possibility of effectively solving the problem (problem governance): strengths and opportunities to solve or reduce the problem in an efficient manner.
4. Social and economic cost of postponing the solution of the problem: indicates the degree to which the proposal will be affected if the central problem is not solved, as well as its consequences, from the social and economic points of view.

In order to prioritize the problems in a practical way, points are assigned to each of the criteria described above. For this purpose, a simple rating scale is established, which could be: High (A), 3

points; Medium (B), 2 points and Low (C), 1 point. To apply the criteria and their evaluation for each of the problems identified, a table is drawn up as follows:

Table 2. Summary table for prioritization of problems

Problems	Criteria				Score
	Magnitude of the problem	**Affected area or zone**	**Possibility to effectively solve the problem**	**Cost of postponement**	
P-1					
P-2					
P-3					

Source: Own elaboration based on the criteria of Crespo Alambarrio (2015).

This table should reflect the evaluation and selection of the central problem, since once the problems have been prioritized, the one with the highest score is selected as the central problem, which must be approved by the work team. The causes and effects will be identified in a subsequent analysis, taking into account the possible relationships it may have with the other problems evaluated and with others that have not been previously identified.

For the identification of stakeholders, it is necessary to think about who is affected by the central problem identified. There is a direct relationship between problems and stakeholders, they constitute a unit. It should be kept in mind that each problem has its own social name and surname; there is no problem that affects everyone in the same way and its determination is always made from a specific point of view. The following should be identified and listed: affected people, affected institutions, affected organizations and other affected companies.

Organize these stakeholders into stakeholder groups, for example: groups of individuals, groups of institutions, groups of organizations and groups of companies.

Each group should be analyzed in detail, taking into account the following aspects directly related to the implementation of the LIPM in the municipalities:

- Problems: What are the main problems affecting the group for the implementation of the laboratories? They can be economic, ecological, cultural, educational, welfare and others.
- Interests: What are the main needs and interests that affect the group for the implementation of the laboratories? They can be of self-improvement, economic, social and others.
- Potentials: What are the main strengths and weaknesses that the group has for the implementation of the laboratories? They can be attitudes towards change, knowledge, skills, behaviors, commitments and others.
- Interrelationships: What are the main conflicts of interest, patterns of cooperation or dependence with other groups that may affect or favor the implementation of the laboratories? They can be powers and influences of the group in relation to others, disagreements with other groups, and others.

This can be seen in the following table:

Table 3. Summary table for stakeholder identification

Aspects	Group of people	Group of institutions	Group of organizations	Company groups
Problems				
Interests				
Potentials				
Interrelation				

Source: Own elaboration

With all this information, it is proceed to the definition of those directly involved in the implementation of the laboratories. In the same way, those involved in the laboratory change as the public problems are solved. For each public problem to be worked on, there are specific stakeholders who should be involved in the co-creation of solutions. Direct and indirect stakeholders are also defined, either positively or negatively. Their position in relation to the implementation of the LIPM is determined. Whether it is cooperative or conflicting, non-compliant or other. Finally, priority is given to the agents on which the problem has the greatest influence (whether positive or negative), who will be those

directly involved in the implementation. The proposals made by the respondents on how and where to install the LIPM will also be studied.

At the end of this first moment, it should be clear the need for the implementation of the laboratory, the problems that affect its execution and the main people involved in this task.

2. Strategic formulation stage: In this stage, some important conceptions about strategy must be assumed that will allow leading the implementation of the LIPM. From the perspective of Valle Lima (2012, p. 157) in his studies on the subject, it has meant that the strategy as a scientific result has as components of the system:

- the mission
- the objectives
- the actions, methods and procedures, resources, those responsible for the actions and the time in which they must be carried out
- the forms of implementation
- forms of evaluation

For this author, "the mission expresses the most general social goals. It is formulated in a general manner and as briefly as possible" (Valle Lima, 2012, p. 157). It should contain the social object of the Laboratory and the goal to be achieved with its harmoniously intertwined implementation.

Objectives are derived from the mission. They constitute the decomposition of the whole (mission) into essential elements that determine the achievement of the expected result in a defined time and context. These components sustain a reciprocal relationship of subordination that starts from the results of the diagnosis and the ideal state projected to be achieved.

Actions are the planned activities that must be carried out to achieve the objectives set. They always answer the questions: What do we have to do? and How can we do it? Therefore, they must guarantee a relationship between the content and the way they are carried out. To this end, methods and procedures for their implementation must be adequately selected. Human, material, financial and technological resources must also be taken into account. In the case of human resources, priority should be given to those directly involved, identified in the previous stage, and they can be enriched by others that are valued, taking into consideration the interdisciplinary and participatory nature of the implementation.

These tasks, generally performed in work teams, require a leader, who becomes the person responsible for the action. This person must lead and control the tactical operations necessary for the fulfillment of the action in the established time. It is appropriate to determine at this point, if precise actions have been designed for the fulfillment of each objective at the end of this process, taking into account that these should "take advantage of opportunities, capitalize on strengths, minimize weaknesses and try to prevent threats from having a significant impact on the organization" (Peñafiel Nivela et al., 2020, p. 49).

The forms of implementation are those actions aimed at putting the proposed strategy into practice, and those of evaluation have the essential purpose of analyzing the strategy in order to make value judgments on the development of the application and its results. Those of evaluation tell us how the strategy as a whole can be evaluated, including, of course, the forms of implementation (Valle Lima, 2012, p. 158).

The projection of the evaluation must make it possible to verify the fulfillment of the objectives. To this end, evaluation criteria must be established with their corresponding indicators, which constitute the main component of the evaluation system. These are measurement standards that are designed according to what is to be measured; they must be qualitative and quantitative. At the end, it should be clear whether the mission is clear and well stated; whether all the sectors, managers and workers are aligned with the strategy; whether it is compatible with the environment; whether it is sustainable over time; and whether its effective implementation corresponds to a reasonable level of risk, based on the assumed scale and its corresponding parameterization. Based on this, a process of strategic feedback should be produced that makes it possible to identify successes and cracks, which result in learning to design other contributions adjusted to the new demands of the context and to improve the performance of public servants, teachers, students and others involved in the process. The proposed structure for the LIPM implementation strategy can be represented as shown below (Figure 1).

Figure 1. Graphical representation of the LIPM implementation strategy
Source: Own elaboration

In relation to this stage, Torres Gómez and Martínez Ballesteros (2014, p. 140) in their study on observatories issue relevant criteria for laboratories. They specify that, in addition to the mission, the laboratory's vision should be highlighted, an aspect that does not contradict what has been stated so far. The vision contains "information on where an organization wants to go, it refers to the projections it has for the future and the place it wants to reach with respect to its competitors and its positioning among customers". It refers to how LIPM wants to be valued and appreciated in the future.

They point out that it is necessary to conceptualize the laboratory's fields of work in order to determine the lines of interest and their objectives. Here, the strategic lines defined in each municipality to promote local development could be evaluated. This will favor the undertaking of tasks for development from an integral and participative action. This definition is not static; as progress is made, new choices are made from the perspective of contributing to the development of the territory.

This stage is the core of the procedure, it is the key to more than 60% of the success of the procedure. What is not conceived or foreseen may affect the scope of the expected results and/or their quality. It is necessary to review whether what is proposed is in line with the legality and organization of the Public Administration.

3. Execution stage: As its name indicates, at this stage, the actions designed are put into practice through the forms of implementation outlined and with the methods and procedures defined. The possibility of enriching what was planned with innovative ideas arising from social practice is not denied; its dialectic character allows it. But it is significant that they are the object of collective decision-making.

It is a period of permanent supervision, not only to see if the actions are being executed, but also to correct errors in a timely manner, to ensure compliance with what has been established, to guarantee quality and transparency in the process and to continue to motivate, encourage and enthuse the participants with the task. The proposal as an engine of change and transformation for the better must lead the administration to higher levels of efficiency, without assuming static and forced positions. The changes must be the result of analysis, exchange and consensus among researchers, public servants and citizens in general.

It is important that at this moment of execution of actions, the people who participated in their conception and formulation are leading the processes, as this guarantees that they will adequately follow the line drawn and avoids interpretations different from what was designed. It is an operational process that requires motivation and leadership skills to coordinate the actions of many people. The role of those responsible for each action is therefore emphasized.

The closing of this stage is the implementation of the laboratory, which must, at least, have minimum conditions to start its operation. As it progresses, errors must be ironed out and its comfort must be improved, so that the place meets the standards of a scientific and innovative entity. It should be pointed out that a training program should be planned for the public servants of the Administration, who will have to know the objective of the LIPM, its functions and how to use the information it manages to make timely and accurate decisions.

4. Evaluation and feedback stage: Evaluation, even when it is determined as a specific stage, it is present in all moments of implementation. Its corrective, educational and transforming nature makes it a transversal component in the whole process, it is systematic and integral.

This stage should not be confused with the evaluation of the strategy conceived in stage two of this procedure, where compliance with the established indicators will be assessed. It is much more comprehensive, since here an integral evaluation of the three previous stages is being carried out. This involves assessing whether the diagnosis carried out was up to what was demanded, whether the instruments used were adequate, whether the strategy formulation was correct, whether the leaders' and participants' modes of action were up to the demands, and others. It is to question everything that was done in order to identify successes and weaknesses in the implementation as a whole, to evaluate the efficiency of the previous stages.

Finally, the actual results achieved should be compared with those desired in the implementation of the LIPM. What superiority or advantages did it provide? This also generates a feedback process of the procedure in terms of contents and forms as experimentation and learning spaces that provide the PA, organizations and citizens with ways to find new solutions to face development challenges in a quick, measurable, efficient and scalable way, as well as attitudes and values in the participants, with emphasis on the leaders who lead the activity. It is a process that generates human, social and economic improvement, in a general way that is evident in the development cycle that should lead to new processes and that highlights its dialectical, participatory and strategic character (Figure 2).

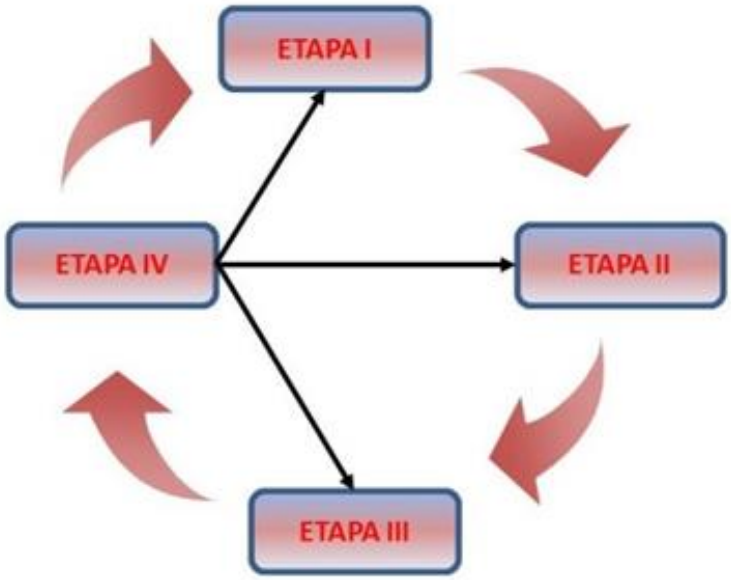

Figure 2. Graphical representation of the development cycle

Source: Own elaboration

For an efficient and effective implementation, the evaluation process must be recorded in writing based on the indicators assumed.

The Municipal Public Innovation Laboratories are spaces to promote a culture of innovation from the search for solutions to problems. This process of knowledge building and learning becomes a preparation for managers and citizens in a horizontal governmental management model based on science and innovation in local governance.

The procedure proposed for the municipality of Bahía Honda, Artemisa province, has a participatory, strategic and scientific character, the dynamics of the PA allows enriching the proposal, taking into account the new situations that may arise in its implementation, emphasizing its dialectical character.

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Conflict of interest

Authors declare that they have no conflicts of interest.

Authors' contribution

María Luisa Ramos Grandal and María Julia Aguilar Aguilera designed the study, analyzed the data and prepared the draft.

Celia Travieso Peña, Grisel González Reyes and Ydania Cardero Barquilla were involved in data collection, analysis and interpretation.

All the authors reviewed the writing of the manuscript and approve the version finally submitted.