

Original article



Strategy for environmental training of government officials of the People's Power



**Estrategia para la formación ambiental de funcionarios gubernamentales
del Poder Popular**

Estratégia de formação ambiental de governantes do Poder Popular

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ABSTRACT

Addressing environmental problems arising in local contexts constitutes a real challenge for government officials of the People's Power in Cuba. In line with this demand, the objective of this work was to design a strategy that contributes to the environmental training process of government officials of the People's Power, based on improved management in solving environmental problems in the communities of Pinar del Río. Theoretical and empirical methods were used, based on the adoption of the dialectical-materialist method, combined with the application of descriptive statistics and methodological triangulation in the diagnostic phase. The theoretical assessment of the strategy was carried out using the user method or Iadov technique, and its practical value was confirmed through participatory action research. The developed strategy is based on the foundations of the investigated process, which begin by considering a system of principles, which highlights the systemic

and complex nature of the environment as a guiding principle, determining that this process be dynamized by taking into account the structure and dynamics of the environmental management model. This is reflected in the implementation methods conceived: a training program for government officials, a training program for trainers, and the creation of a systematic training unit that enables the evaluation of the impact of this process on the performance of these officials in the locality.

Keywords: strategy; environmental training; government officials.

RESUMEN

Enfrentar la problemática ambiental que se genera en los contextos locales constituye un verdadero reto para los funcionarios de gobierno del Poder Popular en Cuba. Alineado a este reclamo, el objetivo del presente trabajo fue diseñar una estrategia que contribuya al proceso de formación ambiental de funcionarios gubernamentales del Poder Popular, en función de una mejor gestión en la solución de los problemas ambientales en las comunidades de Pinar del Río. Se emplearon métodos teóricos y empíricos, a partir de asumir el método dialéctico-materialista, unido a la aplicación de la estadística descriptiva y de la técnica de triangulación metodológica en la fase de diagnóstico. La valoración teórica de la estrategia se realizó mediante el método de usuario o técnica de Iadov, y su valor práctico se constató mediante el método de investigación de acción participativa. La estrategia elaborada se sustenta en los fundamentos del proceso investigado que parten de considerar un sistema de principios, en el que se destaca el carácter sistémico y complejo del medio ambiente como principio rector, determinando que este proceso se dinamice teniendo en cuenta la estructura y dinámica del modo de actuación de gestión ambiental. Lo anterior se concreta en las formas de instrumentación concebidas: un programa de formación para funcionarios gubernamentales, un programa de formación para formadores y la creación de una unidad formativa sistemática que posibilite la evaluación del impacto de este proceso en el desempeño de dichos funcionarios en la localidad.

Palabras clave: estrategia; formación ambiental; funcionarios de gobierno.

RESUMO

Abordar os problemas ambientais que surgem em contextos locais constitui um verdadeiro desafio para os governantes do Poder Popular em Cuba. Em consonância com essa demanda, o objetivo deste artigo foi elaborar uma estratégia que contribua para o processo de formação ambiental dos governantes do Poder Popular, visando aprimorar a gestão na resolução de problemas ambientais nas comunidades de Pinar del Río. Utilizaram-se métodos teóricos e empíricos, baseados na abordagem dialético-materialista, combinados com a aplicação de estatística descritiva e triangulação metodológica na fase de diagnóstico. A avaliação teórica da estratégia foi realizada utilizando o método do usuário ou técnica Iadov, e seu valor prático foi verificado utilizando o método de pesquisa-ação participativa. A estratégia desenvolvida baseia-se nos fundamentos do processo pesquisado, que se baseiam em um sistema de princípios que enfatizam a natureza sistêmica e complexa do meio ambiente como princípio norteador. Esse processo é impulsionado pela estrutura e dinâmica do modelo de gestão ambiental. Isso se reflete nos métodos de implementação concebidos: um programa de treinamento para funcionários públicos, um programa de treinamento para instrutores e a criação de uma unidade de treinamento sistemática que permite avaliar o impacto desse processo no desempenho desses funcionários na localidade.

Palavras-chave: estratégia; treinamento ambiental; funcionários públicos.

INTRODUCTION

In Cuba, within the framework of science- and innovation-based governance, the key role of local governments is recognized in comprehensively addressing the prevention, mitigation, and/or resolution of environmental problems in interaction with universities and community social structures. This highlights the need to contribute to the environmental training of government officials of the People's Power.

The officials of the local bodies of People's Power are responsible, as expressed in Law 150/2022 of the Natural Resources and Environment System, "...in their respective instances and within the scope of their competence, to direct, coordinate and control, in accordance with current legislation, actions in environmental matters..." The above is made possible with priority in "...the integration of the

environmental dimension in the comprehensive planning of development, territorial planning and the municipal environmental strategy..." (2023, p. 2099).

Indeed, environmental policy and management in Cuba are developed based on the main environmental problems and are essentially realized in the territories. Thus, local bodies of People's Power are responsible for their implementation, as well as for establishing adaptations and priorities in interaction with communities and in coordination with the territorial delegations of the Ministry of Science, Technology, and Environment (CITMA) and other state agencies at that level.

Uniquely, the Pinar del Río Environmental Strategy Project for the period 2021-2025 identifies environmental problems that require a leading role from local People's Power bodies to contribute to their solution. These environmental problems can be summarized as soil degradation; pollution; difficulties with the use, management, and quality of water resources; impacts on biological diversity and deterioration of ecosystem goods and services; deterioration of hygiene and sanitation conditions in human settlements; and the negative effects of climate change.

In view of this problem, the present research recognizes the importance of contributing to the environmental training process for government officials of the People's Power. In this sense, we consider the work of Ortiz Bosch and Alejandro Jiménez (2020); Morán (2012); Asín Semberoiz (2006); Valdés and Cabrera (2003), who highlight the significance of the environmental issue and its transversal nature in the field of public administration. However, the authors cited do not stop at a conception of the process of environmental training, which takes into account the relations of a mode of action structured in a gradual way, tempered to the social mission of these officials, impact on their performance in the local context with an integral management in the solution of existing environmental problems, in interaction with community social structures.

On the other hand, in the search for background for this research, there are several authors who have addressed the environmental training process in educational contexts: Mejía *et al.* (2022); Urbina Reynaldo *et al.* (2022); García Lang *et al.* (2021); Hernández González *et al.* (2021). These researchers, according to Márquez Delgado *et al.* (2024), have contributed models, concepts and strategies with the intention of integrating environmental training into the educational teaching process, signifying the transversal nature of said training process.

To analyze how these shortcomings affects government officials in Pinar del Río, an initial exploratory study was conducted. The results are presented in terms of strengths and weaknesses.

The main strengths are summarized as follows:

- Recognition, through events sponsored by international organizations, of the priority of environmental training for local government officials, in order to ensure the formulation and implementation of more sustainable public policies.
- Recognition of the key role of environmental training for Cuban government officials in the performance of their duties for environmental protection, based on the environmental situation in the territory and the nation's new scenarios.
- Existence of a governance management system based on science and innovation, which considers the environmental dimension and its importance in terms of local development, recognizing the key role of the University in these goals.

The main weaknesses are:

- Insufficient training activities that foster knowledge and skills among government officials to manage the solution to environmental problems in communities in a participatory manner.
- Training activities for government officials on environmental issues are largely informative and insufficient, and their impact on solving existing problems is limited.
- The concept of environmental education does not respond to a systematic, gradual, and comprehensive plan for solving environmental problems; it is implemented in an isolated and spontaneous manner, with a reductionist approach to the topics addressed.

Based on this recognition, the general contradiction of the investigation was detected, given by the reality of an environmental training of government officials of the Popular Power that is not focused on managing the solution of environmental problems as part of their social mission, which limits the impact of their performance in the local context, and the need for environmental training of government officials to manage local environmental problems on a systemic basis.

In an attempt to resolve this contradiction, this study was conducted to design a strategy that contributes to the environmental training process for government officials of the People's Power, enabling them to better manage and solve environmental problems in the communities of Pinar del Río.

MATERIALS AND METHODS

The investigation was carried out in the Municipal Assembly of Popular Power (AMPP) in Pinar del Río. The research period was from 2021 to 2023. At the time of the study, the AMPP in Pinar del Río had 24 government officials, 18 of whom were presidents of Popular Councils and six of Permanent Labor Commissions. Of these, 100% of the study population was involved.

A qualitative-quantitative approach with a qualitative predominance was used, based on the dialectical-materialist method as a general research method. From this perspective, theoretical and empirical methods were used.

Among the theoretical level methods that allowed the design of the strategy are: the historical-logical method In the analysis of the historical, theoretical, and conceptual background of the process under study, revealing its trends, relationships, and manifestations; the systemic-structural approach, which made it possible to determine the components of the strategy, their relationships, and the orientation and monitoring of the stages for its development; the analysis and synthesis approach, in the critical appraisal of the reviewed literature, the application of other methods of scientific knowledge, as well as the results obtained in the diagnostic and practical introduction phases; and the modeling method, which allowed for the necessary abstractions to conceive, construct, and substantiate the strategy, based on determining new relationships and qualities of the environmental training process for government officials.

Among the methods and techniques of the empirical level, the following were used: document analysis, a survey of government officials of the People's Power, a structured interview with a specialist from the Municipal Government of Pinar del Río, and an in-depth interview. to the director of the Department of Development and Preparation of Staff at the University of Pinar del Río, Hermanos Saíz Montes de Oca.

In addition to the previous methods, in the diagnostic stage, descriptive statistics were applied using percentage as an aggregation measure and the methodological triangulation technique.

For the specific case of the survey, the different items corresponding to each of the variable's indicators were stored in an Excel 2016 spreadsheet, and a descriptive analysis of the data was carried out, based on obtaining percentages as an aggregation measure.

Participant observation and participatory action research (PAR) methods were also used in the development of the strategy.

The theoretical assessment of the strategy was recognized by the user method or Iadov technique and its practical value was confirmed by the participatory action research method.

The study variable was declared as: the environmental training process of government officials of the People's Power, being defined in correspondence with the theoretical study carried out in the following terms:

[...] sequencing of stages aimed at ensuring the articulation of knowledge in the cognitive, procedural and attitudinal order with a transversal character for environmental management, focused on social participation, which allows them to influence the environmental improvement of the community, based on a systemic and integrative conception of the environment in function of sustainable local development (Márquez Delgado *et al.*, 2023) (p. 22-23).

Derived from the operational definition elaborated, three dimensions of this process and indicators for measurement are determined, coinciding with Mejía *et al.* (2022):

- Cognitive dimension: This is understood as the level of knowledge that officials of the People's Power have to manage the solution to environmental problems at the local level. It addresses what government officials of the People's Power need to know to manage the solution to environmental problems at the local level.
- Procedural dimension: defined as the mode of action to be implemented by government officials of People's Power to manage the prevention, mitigation, or solution of environmental problems. It answers the question of how to manage the solution of environmental problems at the local level.
- Attitudinal dimension: is understood as the level of identification, participation and satisfaction in the search and implementation of solutions to environmental problems.

For the measurement, a qualitative ordinal scale of three values was created that establishes the consideration of: Good, Regular and Bad, according to the values obtained by the indicators identified for each action (Bad: presence in less than 60% of the sample, Regular: presence between 60-85% of the sample and Good: presence in more than 85% of the sample).

RESULTS

Based on the analysis of the results obtained in each of the applied instruments, a methodological triangulation was carried out, which allowed us to arrive at the following characterization of the environmental training process of government officials of the People's Power, at the time of the diagnostic study in the period 2021-2022, through the declaration of strengths and weaknesses.

Strengths:

- All those diagnosed have served as government officials of the People's Power for an average of 5.9 years.
- 100% of the officials surveyed expressed their willingness to address the region's environmental problems, demonstrating their high level of sensitivity and responsibility.
- Recognition of the key role of environmental training in the performance of its functions in environmental protection, in line with the nation's new scenarios.

Weaknesses:

- The concept of environmental training does not respond to a systemic, gradual, and comprehensive plan for solving environmental problems, but is implemented through isolated and spontaneous actions.
- Insufficient connection with the environmental problems of communities and their solutions.
- Limited participatory nature, not promoting training for the formulation and implementation of solutions in conjunction with local stakeholders in the contexts where the problems arise.

In order to contribute to the solution of the shortcomings that gave rise to the research, a strategy was developed as a scientific outcome. Consequently, the result of this research is a strategy for the environmental training process of government officials of the People's Power. This is defined in the following terms: a theoretical-practical system that includes sequenced and interrelated actions through stages that allow its conscious and intentional direction toward the appropriation of knowledge in the cognitive, procedural, and attitudinal order by government officials of the People's Power to manage the solution of environmental problems in conjunction with key local actors in the community. This, with a systemic, transversal, multisectoral, inter-institutional, and participatory nature, favorably impacts their way of acting in relation to the environment in their work activities and personal lives, based on sustainable local development.

Based on this definition, the strategy for the environmental training process for government officials of the People's Power is structured into the following components: introduction-rationale, diagnosis, statement of the general objective, strategic planning, implementation, and evaluation. The components and relationships of the proposed strategy are shown in figure 1.

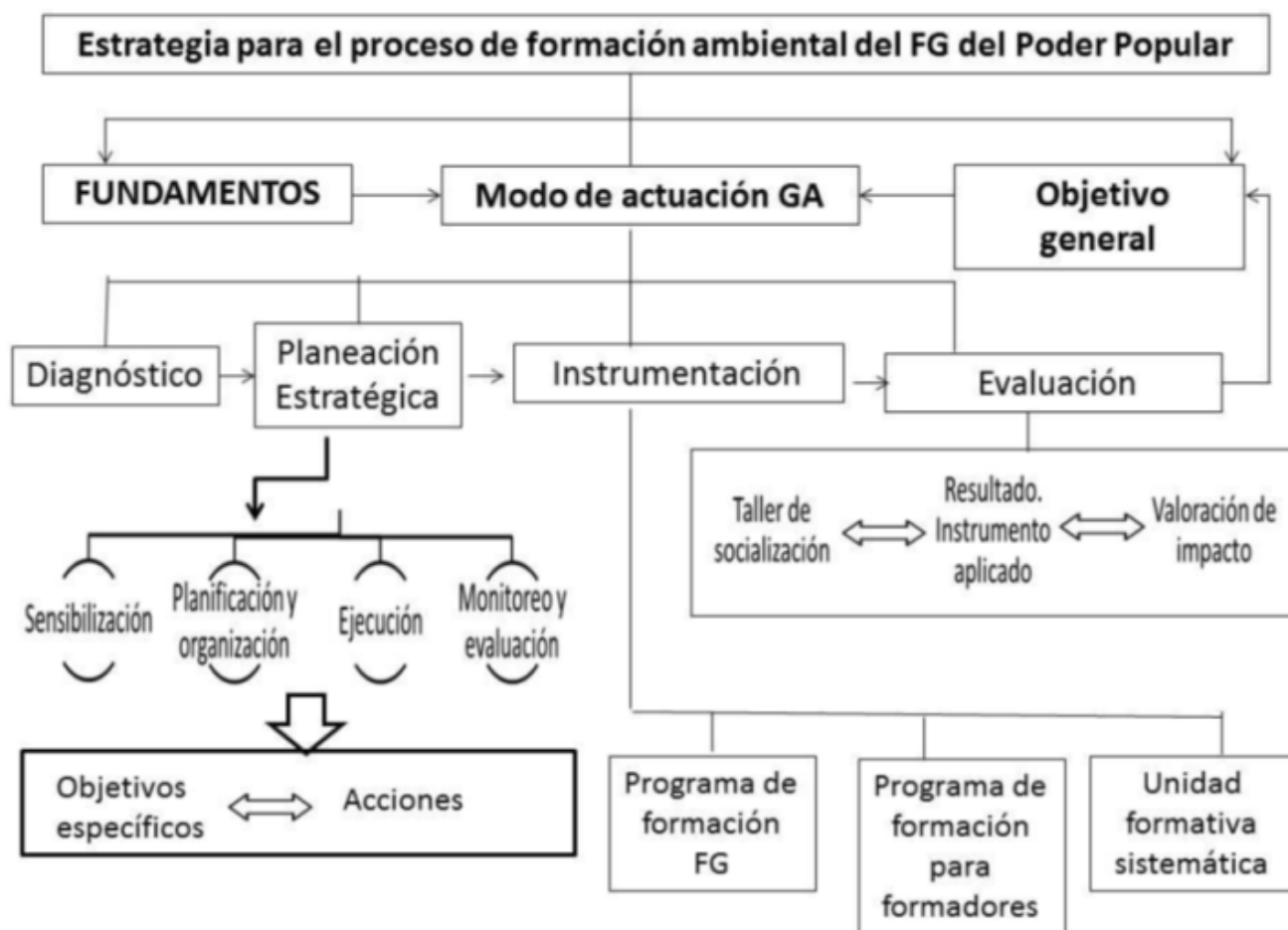


Figure 1. Strategy for the environmental training process of the government official (FG) of the People's Power

Source: own elaboration

Strategy structure

I. Introduction-justification of the strategy for environmental training of government officials of the People's Power

The foundations of the strategy are determined taking into account the following theoretical bases, which are considered as philosophical bases the contributions of Marxist-Leninist theory based on the dialectical materialist method. From this philosophical basis, the studied process signifies the connection between theory and practice, between the general and the particular, and between subject and object, these relationships mediated by activity and communication, in which the subjects who participate in this formative process, while transforming reality, transform them.

From these theoretical bases, and with the purpose of contributing to the solution of the deficiencies that gave rise to the research, the main foundations of the proposed strategy are established.

Basis 1. The environmental training process for government officials of the People's Power is regulated and dynamized through principles that ensure its systemic and contextualized nature.

Considering the theoretical bases explained, in communion with the references and in dialogue with some criteria, a system of principles is discovered that constitute the starting point, guiding ideas or rules that act as drivers of the designed strategy, by assuming characteristic features of the object being modeled, ensuring its systemic and contextualized character.

In this sense, the following principles are proposed:

- The systemic and complex nature of the environment
- The sequenced nature of environmental management as a mode of action
- The dialectical relationship between interdisciplinarity, transversality, multisectorality and interinstitutionality
- The problematizing, participatory and action approach.
- The integration of training in the community
- The socio-affective approach

The relationships between these criteria are based on the principle of the systemic and complex nature of the environment, which constitutes the guiding and general driving force of the strategy.

On this basis, the strategy for the environmental training process of government officials of the People's Power is constructed, allowing the discovery of its essential features and main relationships.

From this perspective the principle of the systemic and complex nature of the environment implies that, through this training process, participants understand that the negative impacts of environmental problems affect nature, society, and the economy equally; and that the analyses carried out must take into account the interrelationships between these dimensions in order to formulate and implement solutions that address the multiple causes that give rise to them. This supports the need for this training process to be organized based on the dynamics of a mode of action that ensures its comprehensive, interdisciplinary, transversal, multisectoral, and interinstitutional nature.

Consequently, the principle of the sequential nature of environmental management as a mode of action is derived from the definition of the systemic and complex nature of the environment. The relationships between these two principles are, in turn, energized by the principle of a problematizing, participatory, and action-oriented approach; the principle of the dialectical relationship between interdisciplinarity, transversality, multisectorality, and interinstitutionality; the principle of the integration of training within the community; and the socio-affective approach. The relationships between these principles are based on the principle of the systemic and complex nature of the environment, which constitutes the guiding principle and general driving force of the proposed strategy.

Basis 2. The environmental training process for government officials of the People's Power is based on the sequenced relationships of the actions of the mode of action that guarantees their participation in the solution of environmental problems, in interaction with the objects of work, which allows determining the knowledge in the cognitive, procedural and attitudinal order that characterizes said process.

Based on the established theoretical foundations and frameworks, the environmental training process for government officials of the People's Power is conceived as based on a mode of action that guarantees their participation in the environmental sphere. In this sense, environmental management is proposed as a mode of action, a generalizing activity that ensures participation in the mitigation or solution of local environmental problems, in conjunction with the various community structures: institutions, businesses, and political and social organizations. To this end, environmental

management must be structured through the following basic actions or skills: diagnosing the environmental situation, planning, implementing, and evaluating the results from/with/for the community.

It is recognized that the actions (diagnosing the environmental situation, planning, implementing and evaluating the results) are energized by community training as a transversal process of environmental management. Community training is constituted in the present research in a gradual process, which is enhanced from the sequencing of actions to diagnose the environmental situation, plan, implement and evaluate the results from/with/for the community. From the generalization of these actions and their operations that dynamize participation, environmental management results as a generalizing activity that integrates them. The above allows us to determine the knowledge in the cognitive, procedural and actitudinal order that characterizes this training process.

From the relationships explained between environmental management as a mode of action that ensures its participation in the solution of environmental problems, in connection with the objects of work (different social structures of the community), the interdisciplinary, transversal, multisectoral and interinstitutional nature of the environmental training process of government officials of the People's Power is noted.

Basis 3. The environmental training process becomes the training of government officials of the People's Power as a transversal process, influencing the improvement of their social and labor performance. In this regard, it is analyzed that the environmental management approach, as a generalizing activity, involves the integration of knowledge from different areas of expertise to mitigate or solve environmental problems. Therefore, environmental training becomes a transversal process that will impact improved performance of government officials, as it requires the integration of knowledge in the application of basic skills (diagnosing, planning, implementing, and evaluating), which are essential for the fulfillment of their functions (directing, coordinating, and controlling).

Environmental training, when analyzed transversal refers to its impact on the other training processes the employee receives, as well as on the performance of his or her duties as a civil servant. In this sense, it is a process that must permeate and intertwine with other training and work activities in order to contribute to improving social and professional performance.

II. Diagnosis

The diagnosis was the second task of this research, and aimed to characterize the initial state of the environmental training process of the government official of the People's Power, revealed in strengths and weaknesses expressed earlier in the present work, which demonstrate the need to develop this strategy

III. General objective

Contribute to the environmental training of government officials of the People's Power, focusing on mitigating and/or solving environmental problems in communities as a means of action, through the implementation of a training program, training of trainers, and the creation of a systematic training unit to monitor environmental training activities.

IV. Stages of the strategy for the environmental training process of the People's Power government official

The following stages are recognized, determining objectives and actions in each of them.

Stage I. Awareness

This stage aims to raise awareness among government officials, trainers, and institutions involved in contributing to environmental training to manage the mitigation and/or resolution of environmental problems in communities.

Among the actions of this stage are:

- Discuss with municipal assembly authorities the need to contribute to environmental training, which will facilitate the participation of officials in the execution of the research, as well as the creation of favorable conditions to ensure the strategy's practical implementation.
- Raise awareness of the need to (encourage interest in) acquiring knowledge in the cognitive, procedural, and attitudinal order, which will be transformed into a mode of action for managing environmental problems in communities.
- Negotiate with organizations and institutions (CITMA, University) that can contribute to the environmental training of government officials of the People's Power in the territory.

- Participate, together with Municipal Assembly officials, in activities within their scope of work, based on recognition of the importance of environmental training within the framework of such activities.
- Visit communities in the territory with Municipal Assembly officials to identify environmental problems and the importance of environmental training in solving them.
- Identify key actors to enhance environmental training for government officials of the People's Power.

Stage 2. Planning and organization

This stage aims to design actions that will contribute to the environmental training of government officials of the People's Power. It is also essential at this stage that, as the actions are planned, organizational issues are addressed to ensure their implementation.

For the development of this stage, it is necessary to take into account the foundations of the strategy. Therefore, the following must be addressed:

- The principles that constitute the starting point, guiding ideas or fundamental rules for the development of the process.
- The dialectical sequencing of actions and operations in environmental management as a mode of action (participatory environmental diagnosis, participatory planning, implementation and evaluation of results).
- The transversal nature of the training of government officials of People's Power.

The following actions are conceived as actions for this stage:

- Design an environmental training program for government officials of the People's Power, which includes curricular and extracurricular activities.
- Design a program to prepare trainers as facilitators of environmental training.
- Create a systematic preparation unit for monitoring environmental training actions from their application in the development of local projects.

Stage 3. Execution of the actions planned in the previous stage

In this stage, the actions planned in the previous stage are implemented, which promote the acquisition of cognitive, procedural, and attitudinal knowledge associated with environmental management. The objective is to implement the planned actions that contribute to the environmental training process of government officials of the People's Power.

Stage 4. Monitoring and evaluation

This stage aims to assess the effectiveness of the actions taken in implementing the strategy.

To this end, the achievement of the objectives set forth in each stage of the strategy and its actions will be taken into account, based on their contributions to the environmental training process for government officials of the People's Power. The following are issues to be assessed: the level of satisfaction of Municipal Assembly officials with the training process received; the levels achieved by government officials in developing environmental management actions; and the level of impact of the environmental training process received on their work in the communities.

In summary, each stage of the proposed strategy is designed to be dynamic, flexible and participatory. Hence, they must be developed in practice, gradually and simultaneously, allowing the difficulties that may hinder the achievement of the objective envisaged in the strategy to be overcome.

V. Implementation of the strategy

The ways of implementing the strategy are developed from the implementation of the actions contemplated in the stages described above, with emphasis on the design and implementation of an environmental training program for government officials, a training program for trainers and a systematic training unit to monitor environmental training, the latter functioning as an articulating action that allows evaluating the impact of the two previous actions and readjusting what is necessary in order to achieve the proposed objective.

VI. Strategy evaluation

Evaluation is conceived as a comprehensive and systematic process through which the proposed strategy is assessed, taking into account the objectives established in each of its stages and their

actions. Key ways to evaluate the strategy's effectiveness include self-assessment and evaluation of what was achieved in workshops, project visits, and fieldwork, as well as through participant observation of activities carried out in the communities.

Accordingly, to evaluate the strategy the following are considered:

- Workshops with the socialization of the results of each stage of the strategy.
- The results of the instruments applied (survey of government officials who participated in the process).
- The assessment of the impact of the strategy in order to measure its long-term effectiveness.

Validation of the strategy

The theoretical assessment of the strategy for the environmental training process of the government official of the People's Power was carried out using the user criterion, using the IADOV Technique as a scientific methodological procedure in the processing of the results, which constitutes an indirect way to study satisfaction.

Using this technique, the level of individual and group satisfaction was determined, obtaining a Group Satisfaction Index (GSI) = 0.9, which reflects acceptance and recognition of the usefulness of the designed strategy (Figure 2).

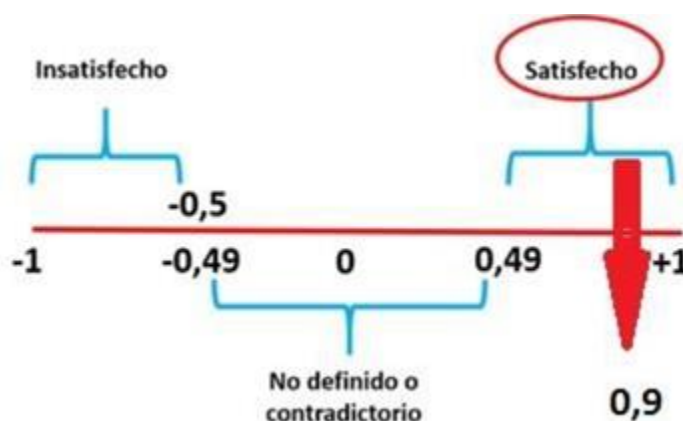


Figure 2. Interpretation of the ISG according to the scale

Source: own elaboration

Participatory action research (PAR) was used for practical validation of the strategy. The process of implementing the strategy through PAR was structured into three phases of gradual implementation: familiarization and co-construction; execution phase; and impact assessment phase. Impact assessment was facilitated through focus groups using case studies. To this end, the environmental training program (one of the strategy's implementation methods) was presented, with 100% of the sample expressing favorable opinions, usefulness, and results.

The theoretical systematization carried out allowed us to argue the need to conceive the environmental training process for government officials of the People's Power as systemic, focused on managing the solution to environmental problems as part of fulfilling their social mission.

The characterization of the initial state of the environmental training process for government officials from the People's Power in the municipality of Pinar del Río revealed shortcomings that limit their performance in comprehensive management of the local environmental problems.

DISCUSSION

The results obtained in this research show that environmental training for government officials of the People's Power constitutes an indispensable process for strengthening local management in mitigating and solving environmental problems in communities. This conclusion coincides with that proposed by Ortiz Bosch and Alejandro Jiménez (2020), who highlight the need to assume the environmental dimension as a transversal component of sustainable local development. In this sense, the designed strategy is articulated with the conception that local governments in Cuba must integrate science, innovation, and environmental education as guiding axes of their management, in accordance with the provisions of Law 150/2022.

The research findings also reveal that, while officials are generally open to environmental management, weaknesses persist, associated with a lack of systematic, gradual, and comprehensive planning for the training process. Morán (2012) warns that environmental training for public officials cannot be reduced to informative or isolated actions, but rather must respond to a structured design that promotes changes in knowledge, attitudes, and modes of action. Accordingly, the proposed strategy seeks to overcome these limitations by designing a comprehensive training system, sequenced in stages and with a strong emphasis on community participation.

In line with the proposals made by Asín Semberoiz (2006), the strategy presented here followed the criteria expressed by de Armas *et al.* (2003). It recognizes the transversal nature of environmental education in public management. For the author, environmental issues must permeate all administrative policies and processes; similarly, this study reaffirms that the actions of People's Power officials require a mode of environmental management that is not limited to the technical, but also impacts institutional culture, strategic planning, and interaction with communities. This perspective finds support in Simões Cacuaça, Yanes López, and Álvarez Díaz (2019), who argue that the transversality of environmental education is a condition for achieving the goals of sustainable development.

Based on what has been expressed up to here, and coinciding with the criteria of Asín Semberoiz (2006), who recognizes that what refers to the environment "must be a transversal policy that permeates the form and substance of all public policies to make them more sustainable" (p. 3), together with the approach on transversality addressed by Simões Cacuaça *et al.* (2019), the need is sustained for a mode of action that becomes "... foundations for pedagogical practice by integrating the fields of being, knowing, doing and living together through concepts, procedures, values and attitudes that guide the pedagogical process" (p. 28).

From a pedagogical perspective, the strategy is based on theoretical foundations that guarantee a developmental, conscious, and participatory approach. The contributions of Leontiev's Activity Theory, Vygotsky's Historical-Cultural Approach, as well as Díaz's Developmental Didactics (2016) and the Theory of Advanced Education (Añorga Morales, 2014) allow us to understand that environmental training should not be viewed as a conventional schooling process, but as a permanent, contextualized, and practice-oriented construction. This is especially pertinent in the case of public officials who are not trained in a traditional academic framework but who require specific skills to fulfill their social mission.

Likewise, the strategy draws on experiences in the educational field. Mejía *et al.* (2022), Urbina Reynaldo *et al.* (2022), García Lang *et al.* (2021), and Hernández González *et al.* (2021) have demonstrated that pedagogical models and environmental education strategies in educational institutions strengthen the integration of cognitive, procedural, and attitudinal knowledge. Although these works focus on students, their contributions confirm the validity of assuming a comprehensive and transversal approach to environmental education, a principle that is adapted in the present research to the field of government management.

Furthermore, the results of the strategy validation, both in its theoretical dimension using the Iadov technique (Fernández de Castro Fabre et al., 2020) and in its practical application through participatory action research, confirm its relevance. The high group satisfaction index (GSI = 0.9) confirms the acceptance of the proposal, which coincides with what de Armas, Lorences, and Perdomo (2003) proposed regarding the importance of designing research strategies that are built from social practice and continuously provide feedback.

Similarly, the strategy's guiding principle -the systemic and complex nature of the environment- aligns with the views of Márquez Delgado *et al.* (2021), who view the environment as a dynamic and interdependent system comprised of nature, society, and the economy. This vision ensures that the proposed environmental training is not limited to the transmission of fragmented knowledge, but rather promotes an understanding of the interrelationships between the different subsystems and, consequently, a more coherent performance of officials in their respective areas.

Overall, the results confirm that the designed strategy not only responds to the identified needs in Pinar del Río but also engages with national and international theoretical frameworks that support its systemic, participatory, and transversal approach. It is recognized, however, that the implementation of this strategy may face challenges related to the availability of resources, the continuity of training programs, and effective coordination between institutions. Future research should evaluate its medium- and long-term impact, as well as its replicability in other parts of the country.

The research found that environmental training for government officials in Pinar del Río's People's Power (PPS) has strengths related to sensitivity, willingness, and commitment to environmental management; however, it also revealed weaknesses associated with the lack of a systemic, gradual, and transversal approach to training activities, which limits their real impact on solving communities' environmental problems.

The designed strategy constitutes a theoretical and practical contribution by conceiving environmental training as a sequenced process, structured in stages, based on an environmental management approach that integrates cognitive, procedural, and attitudinal dimensions. This enables officials to acquire knowledge and skills that enhance their performance in collaboration with local stakeholders, consistent with the principles of contemporary environmental education and the demands of sustainable development.

The philosophical, pedagogical, and didactic foundations adopted -particularly Vygotsky's Historical-Cultural Approach, Leontiev's Activity Theory, Developmental Didactics, and Advanced Education- ensure that the strategy transcends the merely informative and fosters conscious, participatory, and contextualized training processes, favoring the transformation of government practice.

Theoretical validation using the Iadov technique and practical validation through participatory action research confirmed the strategy's relevance and acceptance, achieving a high level of group satisfaction. These results support its feasibility as a tool for improving the social and work performance of officials in local environmental management.

The proposed strategy offers a viable way to integrate the environmental dimension into local development planning, strengthening the interrelationship between government, universities, and communities. Its implementation can contribute to consolidating a more comprehensive, transversal, and sustainable public management model, with a positive impact on the quality of life and environmental preservation.

The need to ensure organizational conditions, resources, and continuity in training processes is recognized as a challenge, as is the need to extend this experience to other areas of the country, which constitutes a future line of research and practical application.

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Conflict of interest

Authors declare no conflict of interests.

Authors' contribution

The authors participated in the design and writing of the article, in the search and analysis of the information contained in the consulted bibliography.



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