

Original article

Professional training of methodologists at the primary education level for the care of students with low vision



Preparación profesional de metodólogos del nivel educativo primaria para atención a educandos con baja visión

Formação profissional de metodologistas do ensino fundamental para o atendimento de alunos com baixa visão

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ABSTRACT

Professional training, as a comprehensive process of acquiring the knowledge, skills, attitudes, and values necessary for the performance of an occupation, becomes the object of study of the research addressing the professional training of methodologists at the Primary Education Level regarding the actions they develop with the structures subordinate to them in favor of the educational care of students with low vision. The study aimed to design a professional training strategy of methodologists at the Primary Education Level on the educational care of students with low vision in the province of Pinar del Río. The use of different scientific research methods at the theoretical, empirical, and statistical levels enabled the attainment of results and the characterization of the state of the

methodologists' training, serving as a basis for the design, development, and evaluation of a professional training strategy, which was structured in four stages and included differentiated actions comprising the development of workshops, a training course, experience exchanges, reflection spaces, among others. The sample consisted of methodologists, managers of the General Directorate of Education, and support teachers. Validation by experts and in-depth sessions with the methodologists indicate a high percentage of very adequate ratings and high acceptance of the strategy, which becomes a valid tool for transforming the professional training of methodologists in the context of the Third Improvement of the National Education System, with potential for generalization.

Keywords: educational care; low vision; primary education; trainer of trainers; methodologists; professional training.

RESUMEN

La preparación profesional como proceso integral de adquisición de conocimientos, habilidades, actitudes y valores necesarios en el desempeño de una ocupación, se convierte en objeto de estudio de la investigación que aborda la preparación profesional de los metodólogos del nivel educativo primaria sobre el accionar que desarrolla con las estructuras que se le subordinan a favor de la atención educativa a educandos con baja visión. El estudio tuvo como objetivo diseñar una estrategia de preparación profesional para los metodólogos del nivel educativo primaria sobre la atención educativa a educandos con baja visión en la provincia de Pinar del Río. El empleo de diferentes métodos de investigación científica del nivel teórico, empírico y estadístico posibilitó la obtención de los resultados y la caracterización del estado de la preparación de los metodólogos y sirvió de base para el diseño, elaboración y evaluación de una estrategia de preparación profesional; esta se estructuró en cuatro etapas y comprendió acciones diferenciadas que incluyeron el desarrollo de talleres, un curso de preparación, intercambios de experiencias, espacios de reflexión, entre otras. La muestra estuvo integrada por metodólogos, directivos de la Dirección General de Educación y maestros de apoyo. La validación por los expertos y las sesiones de profundidad con los metodólogos indican un elevado porcentaje de valoraciones muy adecuadas y la alta aceptación de la estrategia, la que se convierte en una herramienta válida para transformar la preparación profesional de los metodólogos en el contexto del Tercer Perfeccionamiento del Sistema Nacional de Educación, con potencialidades para su generalización.

Palabras clave: atención educativa; baja visión; educación primaria; formador de formadores; metodólogos; preparación profesional.

RESUMO

O desenvolvimento profissional, entendido como um processo abrangente de aquisição de conhecimentos, habilidades, atitudes e valores necessários para o desempenho de uma função, torna-se o tema desta pesquisa, que aborda o desenvolvimento profissional de metodologistas do ensino fundamental em relação ao seu trabalho com estruturas subordinadas para apoiar as necessidades educacionais de alunos com baixa visão. O estudo teve como objetivo elaborar uma estratégia de desenvolvimento profissional para metodologistas do ensino fundamental focada no apoio educacional a alunos com baixa visão na província de Pinar del Río. A utilização de diversos métodos de pesquisa científica – teóricos, empíricos e estatísticos – possibilitou a coleta de resultados e a caracterização do nível atual de preparo dos metodologistas. Isso serviu de base para a elaboração, o desenvolvimento e a avaliação de uma estratégia de desenvolvimento profissional. A estratégia foi estruturada em quatro etapas e incluiu atividades diferenciadas, como oficinas, um curso de formação, intercâmbios de experiências e sessões de reflexão. A amostra foi composta por metodologistas, diretores da Direção Geral de Educação e professores de apoio. A validação por especialistas e as sessões aprofundadas com metodologistas indicam uma elevada percentagem de avaliações muito positivas e uma forte aceitação da estratégia, tornando-a uma ferramenta valiosa para transformar o desenvolvimento profissional de metodologistas no contexto da Terceira Melhoria do Sistema Nacional de Educação, com potencial para ampla adoção.

Palavras-chave: apoio educacional; baixa visão; educação básica; formador de professores; metodologistas; desenvolvimento profissional.

INTRODUCTION

The world is experiencing rapid transformations in all aspects of life, requiring the preparation of professionals who will contribute to its improvement and are part of the aspirations for sustainable development. These changes present unprecedented challenges for education systems, which must guarantee not only widespread access but also quality and equity in the educational services they

provide as a key factor in national development and a guarantee of the right to a quality education for all.

In Cuba, educational policy is consistent with this demand, having as essential strategic objectives the reconciliation of the concept of mass education with that of quality. Consequently, it projects the efficiency of the teaching and learning process, whose imperative has been translated into the actions of the Third Improvement of the General Education System, which prioritizes the scientific and pedagogical preparation of teachers and methodologists, educational attention to diversity, and the strengthening of methodological work at different educational levels (Navarro & Valle, 2025).

In this regard, there is a growing interest in professionalizing the role of methodologists, transforming them into leaders capable of both directing and efficiently organizing the system of educational influences. Therefore, emphasis must be placed on professional development as a means to improve their job performance and thus contribute to quality education.

The need for professional development for methodologists is recognized in studies by Cardona *et al.* (2025), which highlight their need to incorporate new knowledge, skills, and motivations to assume and perform their responsibilities effectively. Meanwhile, Turrueles *et al.* (2025), among others, point to the ongoing, continuous, and systematic nature of this development and its impact on... Updating, deepening and perfecting knowledge (knowing), skills (knowing how to do) and attitudes-values (being), as aspects that allow raising the quality of their professional pedagogical activity.

In this context of action, his role as a trainer of trainers is expressed, since he does not intervene directly in the classroom, but rather prepares those who do, which constitutes a specific function that demands higher levels of preparation.

Therefore, the professional training of methodologists must include competencies in management, planning, negotiation, and policy evaluation, enabling them to operate as agents of change within the educational environment, extending beyond the classroom. The development of competencies for educational support based on real-world professional practice within the current training of methodologists represents a gap that justifies the relevance of this research.

The research conducted indicates that the literature lacks specific strategies for methodologists, as the intermediary link between educational policy and the classroom, to translate educational approaches into concrete practices. While studies by Rodríguez and Keeling (2024) address the

professional development of methodologists, García *et al.* (2024) focus on the professional development of provincial methodologists in Technical and Vocational Education within the legal framework. Therefore, a theoretical and practical gap persists regarding professional development models that integrate the psychopedagogical, didactic, and scientific-technical knowledge necessary for educational support.

The work of Grass *et al.* (2023) and Echeita (2025), among others, recognizes the value they place on educational support as a planned, systematic, and differentiated pedagogical process of an interactive and social nature, aimed at enhancing the holistic development of students. These elements were also considered by Tarrá (2021) in terms of the value of the teacher's methodological preparation.

Therefore, educational support implies the modification of environmental conditions and the development of compensatory skills, in order to guarantee equal opportunities, equity, and effective educational inclusion.

It is in this context that educational support for students with low vision emerges as an area that demands changes in the practices of those responsible for its implementation. According to statistical data consulted at the General Directorate of Education of Pinar del Río in 2023, of the 87 students diagnosed with low vision, 11 attended special education and 76 attended primary education. This reality shows that 87.4% are served at the primary education level, which constitutes a challenge and requires specific training for the methodologists responsible for guiding pedagogical practice.

Given these demands, it is necessary to improve the quality of educational support for students with low vision at the primary level. Therefore, it is essential to provide greater training for those involved in this process, enabling them to acquire scientific and pedagogical knowledge, skills, and abilities, as well as motivating professionals to seek and develop strategies for transforming the school environment.

The exploratory study conducted in the province of Pinar del Río since 2022, as part of ongoing research, revealed shortcomings in the development of the competencies of primary education methodologists as managers of policy implementation for the professional development of subordinate management structures. Specifically, the study highlighted insufficient preparation for designing and implementing educational support strategies for students with low vision, particularly

in integrating psycho-pedagogical assessment, understanding optical and non-optical aids, and establishing inter-institutional collaboration with healthcare specialists.

This leads to a critical examination of their actions, in order to influence the solution of the existing problems and contribute to their transformation, therefore the objective is: Design a professional preparation strategy for methodologists at the primary education level in educational care for students with low vision in Pinar del Río.

The professional preparation strategy is built from a comprehensive, multisensory and intersectoral conception of educational care, enabling the methodologist for its coherent articulation with the pedagogical practice of the territory and the direction of the preparation of the management structure that is subordinate to him.

MATERIALS AND METHODS

The research adopted the dialectical-materialist conception as the general method for analyzing the scientific problem and relied on theoretical methods that served as the basis for systematizing the knowledge necessary to underpin the professional development strategy. Key methods included: historical-logical, analysis and synthesis, modeling, systems approach, induction, and deduction. Empirical methods were also employed: document analysis (annual plan, methodological support designs, professional development strategy, evaluation reports, course syllabi), scientific observation (course committees, methodological preparation sessions), interviews with methodologists and administrators, and surveys of support teachers. These methods allowed for an assessment of the methodologists' level of professional development. of the primary education level.

The application of methodological triangulation proved useful in the research process, ensuring the reliability of the results and identifying points of agreement and disagreement, their causes, and the criteria regarding the relevance of the professional development strategy. Descriptive statistical techniques were used to process the data, allowing for the overall evaluation of the variable.

In the study, three sample groups were intentionally selected: the first, made up of the seven methodologists from the General Directorate of Education in Pinar del Río, representing 100% of the total universe of methodologists at this level in the province (all are Bachelors in Primary Education, 71.4% have the category of Master and 57.1% have more than 30 years of teaching experience); the second group, made up of five directors, all Bachelors in Education (80% Master and 40% with

more than 25 years of professional work); and the third group, made up of two support teachers who are key informants on the educational care process, both Bachelors in Special Education and Master in Education, with more than 30 years of teaching experience.

The variable identified was the professional preparation of primary education methodologists for providing educational support to students with low vision. This was considered a continuous, structured, conscious, and systemic transformation process, with levels of individual and collective development, resulting from the expansion of the methodologists' theoretical and methodological knowledge. The variable was operationalized in three dimensions with their corresponding indicators.

The strategy was validated through two complementary approaches: expert review (to ensure theoretical relevance, epistemological coherence, and generalizability); and in-depth sessions with the target methodologists (to confirm its practical feasibility under real-world conditions). It should be noted that this was a prospective validation; that is, an evaluation of the design before its systematic implementation, not a measurement of post-intervention effectiveness.

RESULTS

Diagnostic results

The investigations carried out revealed deficiencies in the preparation of primary education methodologists in specific aspects of educational care, which limits their ability to influence pedagogical practice.

Methodological triangulation was used to analyze and evaluate the collected information, enabling the grouping and comparison of the results. Its application allowed for the identification of points of agreement and disagreement among the data, allowing for the assessment of the relative objectivity of each instrument used. Table 1 shows the overall results obtained in the diagnostic assessment.

Table 1. Diagnostic results by indicators and dimensions

Dimension	Indicator	Level of evaluation	Frequency of coincidence between instruments	Convergence percentage
Cognitive	1.1. Knowledge about variability in development	Unsuitable (PA)	5/5	100%
	1.2. Knowledge about psycho-pedagogical characterization	Unsuitable (PA)	5/5	100%
	1.3. Knowledge about corrective-compensatory work	Inadequate (I)	5/5	100%
	1.4. Knowledge about types of aid	Unsuitable (PA)	4/5	80%
	1.5. Knowledge of specific curriculum	Inadequate (I)	5/5	100%
Procedural	2.1. Application of psycho-pedagogical characterization	Unsuitable (PA)	4/4	100%
	2.2. Application of corrective-compensatory work	Inadequate (I)	4/4	100%
	2.3. Application of types of aid	Unsuitable (PA)	4/4	100%
	2.4. Application of specific curriculum	Inadequate (I)	3/3	100%
Attitudinal	3.1. Perception of educational support	Unsuitable (PA)	2/2	100%
	3.2. Action associated with educational support	Unsuitable (PA)	2/2	100%

Note: The Somewhat Adequate (PA) level indicates partial compliance; Inadequate (I) indicates significant absence. The frequency of agreement reflects the number of instruments that converge in the evaluation out of the total applied per indicator.

Below is a summary of the results obtained in the methodological triangulation for each dimension, to finally refer to the main convergences and divergences found.

The cognitive dimension is at an inadequate level. (Three indicators rated as Poorly Adequate and two as Inadequate). 100% of the instruments indicate that the methodologists lack specialized knowledge regarding the educational support of students with low vision. The observation guide and the methodological support design are insufficient in operationalizing the necessary specific content. The professional development strategy does not include differentiated topics. The methodologists possess practical experience but lack specialized theoretical and methodological grounding.

The procedural dimension It presents an inadequate level (two indicators rated as Poorly Adequate and two as Inadequate). Methodologists do not apply in practice the distinctive elements of educational support for students with low vision. Subject preparation, observed committees, and methodological support designs reflect a generic approach to the educational process. Administrators and support teachers recognize the need for change.

The attitudinal dimension is at a substandard level, where the instruments converge in this respect; however, a significant divergence emerges: methodologists demonstrate commitment and responsibility toward educational support (positive attitude), but this disposition does not translate into effective action due to a lack of theoretical and methodological knowledge. Administrators acknowledge institutional responsibility but express concern about the complexity of the issue. Observations of subject committees confirm the gap between intention and practical application.

In summary, the cognitive dimension shows three indicators rated as Poorly Adequate (60%) and two as Inadequate (40%). The procedural dimension shows two indicators rated as Poorly Adequate (50%) and two as Inadequate (50%). The attitudinal dimension registers two indicators rated as Poorly Adequate (100%), with no inadequate ratings, which confirms the paradox between positive disposition and limited performance. Convergence between instruments reaches 100 % in nine of the 11 indicators and 80% in indicator 1.4, which lends high reliability to the results.

The main convergences and divergences are:

Identified convergences

1. Widespread lack of specialized knowledge. The methods and instruments applied converge in indicating that methodologists lack specific knowledge about the educational support for students with low vision in its three dimensions (cognitive, procedural, and attitudinal).
2. Generic management tools. The observation guide, methodological support designs, and subject preparations do not incorporate indicators or specific requirements for the educational support of students with low vision, which perpetuates the gap.
3. Recognition of the need for preparation. Methodologists, administrators, and support teachers agree on the need for specialized preparation activities.
4. Gap between willingness and practice. Methodologists show a positive attitude and commitment, but their performance is limited by a lack of knowledge.

Identified divergences

1. Experience vs. knowledge. Methodologists report having experience in attending to students with low vision (71.4%), but they lack knowledge about their variability in development, revealing a practice based on intuition rather than scientific foundation.
2. Regulations vs. practice. Educational regulations establish general principles of quality and systematic preparation, but these are not operationalized in methodological working documents, nor in the improvement strategy for the specific case of low vision.

Based on the triangulated analysis of the data obtained through content analysis, observation, interviews, and surveys, it is concluded that:

- The professional preparation process of methodologists at the primary education level in the educational care of students with low vision presents a generally inadequate level, with a tendency towards inadequacy in the indicators related to corrective-compensatory and developmental work, and the specific curriculum.
- There is a high degree of convergence among the methods and instruments used, which lends validity and reliability to the results obtained. Methodological triangulation allows us to state with scientific rigor that the identified problem is not a subjective assessment, but an objective reality supported by multiple sources of evidence.

- The structural weakness of the methodological work system (absence of specific indicators in the observation guide, generic methodological aid designs, insufficient improvement strategy) constitutes one of the fundamental causes that perpetuate the insufficient preparation of methodologists.
- The positive attitude and commitment of the methodologists constitute a significant potential that, articulated with a differentiated and specialized professional preparation system, can foster change in the investigated reality.
- Methodological triangulation validates the identified regularities and confirms that the research problem is supported by convergent evidence from multiple sources and perspectives.

The main recommendations derived from the triangulation refer to:

1. Review of management instruments, so that it allows incorporating into the observation guide and the methodological aid designs specific indicators for the educational attention to students with low vision.
2. Design of a differentiated improvement strategy, which includes topics on variability in development, psychopedagogical characterization, corrective-compensatory and developmental work, types of aid and specific curriculum.
3. Articulation with the special education system, which allows strengthening the advice of the Special Education department and the special school as a Resource and Support Center in the methodological work system.

Triangulation revealed that the problem lies not in the methodologists' disposition (positive attitude), but rather in the structural elements surrounding them: generic management tools, a disjointed professional development strategy, and inoperative regulations. Therefore, in response to these needs, a professional development strategy is proposed, the design of which took into account the structural causes that give rise to these needs, and which will be presented below.

Description of the professional preparation strategy

The professional preparation strategy has taken into account its harmonious integration into the existing methodological work system, which implies the development of general actions that contribute to this component, including:

- Review of the observation guide in order to incorporate specific indicators for the care of students with low vision.
- Updating methodological aid designs to include differentiated content on educational support for low vision.
- Linkage with the research project "Diverse and equal for an inclusive Pinar del Río society", which allows it to be used as a scenario for practical training.

The transformation of reality through the professional development strategy comprises a plan of actions aimed at the multifaceted development of primary education methodologists, establishing in its projection the link between theoretical and practical knowledge that fosters educational support for students with low vision. These aspects have been taken into account in designing the professional development of methodologists in the various spaces offered by the work system of the General Directorate of Education in Pinar del Río.

Operationally, the professional preparation strategy is defined as a system of integrative, interrelated and sequenced actions, aimed at transforming and completing the knowledge, skills, abilities and modes of action of the methodologists of the primary education level, in accordance with the diagnosed needs and the defined objectives, which allow them to direct the subordinate structures to guarantee educational attention to students with low vision.

The professional development strategy is characterized by its flexibility, social relevance, scientific foundation, and focus on the professional and personal development of the trainees. It aims to equip methodologists with the necessary skills to guide educational support for students with low vision, integrating the various components that translate into short-, medium-, and long-term actions.

This strategic organization maintains a sequential and interconnected order among all its elements, with a distribution that allows for its organized implementation and subsequent evaluation. Therefore, the implementation schedule is integrated into the school calendar, running from September of the year it begins until July of the following year it concludes.

The mission of the professional development strategy is to ensure transformative changes in the practices of primary education methodologists, thereby contributing to the educational support of students with low vision and fostering a comprehensive, multisensory, and intersectoral approach. Its overall objective is to contribute to the professional development of methodologists.

One component of the professional development strategy involves analyzing the underlying theoretical framework, which is crucial for understanding the contributions of other sciences. The use of historical-logical methods, document analysis, and a systems approach facilitated the identification and refinement of these foundations, and a comprehensive summary of them follows.

As a starting point, it is emphasized that educational support becomes a right for all students in any school setting. Therefore, it requires that the training of education professionals, and particularly methodologists as managers of the training of subordinate structures, transcends general pedagogical knowledge to incorporate specific expertise on functional diversity, curricular adaptations, specialized teaching resources, and intersectoral collaboration, thus shaping an educational approach that is simultaneously comprehensive (addressing all dimensions of development), multisensory, and intersectoral.

Multisensory learning is assumed in the educational support of students with low vision, using a pedagogical approach that implies knowledge is constructed through the coordinated integration of multiple sensory channels (visual, auditory, tactile, kinesthetic, olfactory, and gustatory). Instrumental and social mediation plays a crucial role in this process, enhancing existing neural networks. From a historical-cultural perspective, this involves reorganizing the functional structure of the student's cognitive activity, so that functions previously supported by the visual analyzer are now mediated by instrumental systems that activate other analyzers (Vygotsky, 1995).

In the case of intersectoral collaboration, this constitutes an indispensable organizational principle for learning about the educational support of students with low vision. The methodologist, as a trainer of trainers, acts as a facilitator and coordinating force between the education system, the health system, the family, and social organizations. Their professional training must include specific competencies for mapping institutional resources, communicating with other professionals, negotiating institutional adjustments, and documenting intersectoral processes. This approach moves beyond isolated classroom work and ensures that student support is based on a coherent, continuous, and needs-centered design, thereby collectively constructing integrated knowledge.

One element that has emerged in the analyses conducted is the notion that the methodologist acts as a trainer of trainers. Their role consists of empowering the staff under their supervision to design and implement multisensory teaching methods that guarantee the student's access, participation,

and progress within the regular curriculum, preserving their residual visual capacity and integrating tactile and auditory channels simultaneously and coherently.

This role requires specific competencies in teacher training methodology, resource management, and inter-institutional coordination, all of which must be systematically developed during professional preparation. This goes beyond individual pedagogical advising to encompass territorial strategic planning, resource allocation, the design of local protocols to address existing regulatory gaps, inter-institutional coordination with health and social organizations, and accountability for achieved results.

The highlighted elements are an integral part of the professional preparation strategy designed and conceived in four stages, which will be presented below.

Stage I. Diagnosis: Its purpose is to analyze the state of preparation of primary education methodologists in the educational care of students with low vision and to know the strengths and weaknesses that are present in their performance.

The actions involved include a methodological meeting with the directors of the General Directorate of Education to establish connections with the proposal's objectives; defining the dimensions and indicators for gathering information on training needs; applying the developed instruments; and processing the results to identify those training needs. It is important to raise awareness about the importance of training and to establish coordination mechanisms that ensure the efficient use of material and human resources in carrying out future actions.

Other actions carried out during this stage include coordination with the José Martí special school, as a Resource and Support Center, for the development of different theoretical and practical activities; as well as the establishment of working agreements with the National Association of the Blind and Health that enable the use of necessary resources that are adapted to the needs of students with low vision.

The results highlight the training needs of methodologists, which are manifested in their insufficient knowledge of the theoretical, methodological, and attitudinal aspects that underpin the educational support of students with low vision. These needs provide the basis for presenting potential solutions.

Stage II. Planning: In this stage, actions related to ensuring the designed activities are developed to guarantee the success of their implementation, reconciling the solutions and the material and human resources to carry them out.

To achieve the proposed objective, preparatory meetings are organized with the methodologists to contextualize the strategy within the annual activity plan and redesign the improvement actions. Five interconnected organizational structures are planned:

- Preparation course. Developed by the Special Education Department, this 52-hour course integrates theoretical and methodological sessions, practical activities, and guided self-study. Topics covered include: developmental variability, psycho-pedagogical characterization, corrective-compensatory and developmental work, types of optical and non-optical aids, and specific curriculum. Its duration is designed as an initial training component; the development of complex procedural skills is ensured through demonstration workshops and systematic self-study.
- Workshops. These constitute spaces for theoretical-practical integration with three moments: introduction (review of course content), development (linking with educational practice through group discussion and case analysis), and conclusions (generalizations and guidance for further study).
- Self-preparation. This organizational form is permanent and should stimulate independent study, autonomy and critical thinking of the methodologist, serving as support and deepening to face-to-face actions.
- Meetings for exchanging experiences. They become spaces for reflection on the implementation of educational support, including the event "Growing Together: Inclusive Practices for Students with Low Vision," which promotes collaborative learning and the evaluation of levels of autonomy achieved.
- Scientific event. Space for disseminating acquired pedagogical experiences, carried out after the implementation of the previous forms, with the participation of all the professionals involved.

Stage III. Implementation: This stage fosters the consolidation of the professional development activities for methodologists. It involves the application of the planned organizational structures.

For the execution of the preparation strategy, some aspects must be taken into account that will help guarantee its success and quality, where the following stand out: the willingness, commitment, protagonism and responsibility of all participants; the assurance of hygienic and material conditions for compliance with the established schedules; the achievement of an affective and cooperative climate; the assurance of prior conditions and the necessary material, among others.

This stage involves a coordination meeting with support teachers, specialists from the José Martí Special School, and the methodologist who oversees the visual impairment program in the Special Education Department of the General Directorate of Education in Pinar del Río. During this meeting, the professional development strategy is presented, including an analysis of its components, objectives, and actions, as well as efforts to raise awareness, foster commitment, and encourage participation in its implementation. This stage also encompasses the practical application of all planned organizational structures.

Stage IV. Evaluation: This stage aims to evaluate the implementation of the professional development strategy, considering the various planned and executed actions, based on the needs and interests identified in the study. In the strategy's structure, evaluation appears as the final stage, even though it is a process present in previous stages, making it an important element in its redesign.

Evaluation is viewed as both a process and a result, with the intention of comprehensively assessing transformations based on the knowledge demonstrated by methodologists, who become active participants and systematically engage in self-evaluation and peer-evaluation activities, where feedback is fundamental for decision-making. From this perspective, evaluation allows us to understand the progress of the process at different stages and the possibility of redesigning it based on new needs that arise as a result of its implementation.

The stages undertaken are interconnected based on the sequential nature of the actions, which allows for the establishment of links between them and enables monitoring of the progress of the methodologists' training process at each stage of the various organizational structures planned. This makes it possible to redesign the objectives, actions, and other components of the proposed strategy.

Validation results

The professional development strategy was prospectively validated using expert criteria, achieving a stable consensus with a Kendall's W coefficient of 0.81 in 10 of the 11 indicators. The overall criteria for internal consistency, alignment with the diagnosis, epistemological coherence, feasibility of implementation, methodological innovation, and generalizability reached an average level of 4.5, with a 93.3% agreement rate and a final overall assessment of adequate.

Expert validation confirms the quality of the strategy design and its alignment with teacher training programs in educational support that emphasize the combination of theoretical grounding, situated support, and reflective practice. Expert review allowed for contextual adjustments that strengthened the intervention's feasibility by replicating procedures validated in the design of educational programs. The inclusion of the "epistemological coherence" criterion proved crucial in resolving the fragmentation between operational definitions and indicators identified in preliminary versions of the study.

Empirical validation through in-depth sessions with the seven target methodologists revealed the following findings on the projected feasibility of the strategy.

- In the cognitive dimension, the methodologists recognized the need to expand their knowledge of the variability in the development of students with low vision, particularly regarding the distinction between central and peripheral visual impairments, and their differentiated pedagogical implications. They positively valued the inclusion of content on the link between clinical diagnosis and educational support, as well as on optical and non-optical aids. However, they anticipated difficulties in the practical application of these aids in the regular classroom without continuous specialized support.
- In terms of procedure, the methodologists planned to incorporate differentiated actions into the design of the methodological support, including demonstration workshops on curricular adaptations and visits to classrooms serving students with low vision. They recognized the value of collaborating with the José Martí special school to enrich theoretical understanding with practical experiences. However, they identified institutional barriers to implementation: resistance from some teachers to adaptations, insufficient material resources in primary schools, and time constraints in the methodological work schedule.

- In terms of attitude, a positive disposition toward the implementation of the strategy was observed. The methodologists embraced the support of students with low vision as an integral part of their role, moving beyond the notion that this is solely the responsibility of special education. They expressed a commitment to ongoing professional development and a desire to become multipliers of the knowledge acquired in their communities. They proposed the creation of a network for methodologists from different provinces to share experiences and best practices.

The triangulation between expert assessment and in-depth sessions confirms the relevance, feasibility, and transformative potential of the strategy. While experts guarantee that the proposal meets scientific quality criteria, methodologists reveal that its effectiveness will depend on the institutional conditions under which it is implemented: material resources, available time, teacher commitment, and collaboration with specialists. This complementarity strengthens the validity of the research and indicates that the strategy must be linked to institutional transformations to ensure its impact.

DISCUSSION

In order to establish the actions aimed at the professional preparation of primary education methodologists, it is necessary to clarify that low vision is not an arbitrary intermediate state between "normal" vision and total blindness. It implies a residual visual function usable for school learning and requires specific didactic approaches. According to the International Classification of Functioning, Disability and Health, a person with low vision has visual acuity between 20/70 and 20/400 in the better eye with optical correction, or a visual field of less than 20 degrees (UNESCO, 2021).

This conceptual precision is indispensable for the methodologist, since it determines that educational attention cannot be limited to frontal placement in the classroom or increasing the font size, but demands a functional analysis of residual visual capacities and their potential for access to the ordinary curriculum.

The results of the prospective validation show that the structure of the professional preparation strategy was deemed relevant by expert opinion and feasible by the target methodologists. However, it is necessary to rigorously distinguish that these results confirm design quality and contextual viability, not implementation effectiveness.

This research provides the first phase (design and prospective validation), with the impact assessment pending through an intervention study that measures the levels of competence development before and after systematic implementation.

The higher value placed by methodologists on the attitudinal dimension compared to the procedural dimension can be explained by the different nature of the changes each dimension entails. Attitudes and dispositions, once activated through group reflection and contact with case studies, are consolidated more rapidly than complex procedural skills, which require interactive cycles of practice, supervision, and feedback for mastery.

In this sense, the 52 hours of instruction in the preparatory course are conceived as an initial training core that prioritizes theoretical and conceptual foundations and the modeling of basic procedures, but they do not aim to develop highly complex procedural skills on their own. The integration with systematic self-study, workshops, and exchanges of experiences constitutes the compensatory mechanism that extends reflective practice time beyond direct contact, enabling the transition to autonomous application, which represents a higher level in the training of trainers.

The role of the methodologist as a coordinating node between the education system, health, families, and social organizations, as Ainscow (2020) points out, demands competencies that extend beyond the classroom and are integrated into territorial strategic planning. Methodologists validated the relevance of this intersectoral approach but identified institutional barriers to its implementation: teacher resistance to curricular adaptations, insufficient material resources in primary schools, and time constraints in the methodological work schedule.

These barriers do not constitute a limitation of the strategy itself, but a structural condition of the context. This issue must be addressed at the local educational policy level, reinforcing the arguments of García *et al.* (2012) and González *et al.* (2020) regarding the need for support in preparing those responsible for student care. Triangulation between expert validation and in-depth sessions with participants confirms that the strategy's effectiveness will depend decisively on the institutional conditions under which it is implemented. While experts guarantee that the proposal meets scientific quality criteria, methodologists reveal that its actual impact is mediated by: material resources, available time, teacher willingness, and collaboration with specialists.

This complementarity strengthens the validity of the research and indicates that the strategy should be understood as a component of a broader system of institutional transformation, not as an isolated

intervention. The institutionalization of the strategy within the methodological framework of the Directorate General of Education is therefore a necessary but not sufficient condition to guarantee its sustainability.

Finally, although the strategy was designed in response to the specific conditions of Pinar del Río (concentration of 87.4% of students with low vision in regular primary schools, lack of differentiated management instruments and particular configuration of the provincial methodological work system), its contextual anchoring does not limit its transfer potential.

The theoretically generalizable elements are: the comprehensive, multisensory, and intersectoral approach to educational support; the operationalization of preparation in three dimensions (cognitive, procedural, and attitudinal); the combination of organizational forms that integrate initial training, supervised practice, and collaborative reflection; and the connection with a Resource and Support Center as a hub for specialized guidance. The contextually variable elements that would require adjustment are: the implementation schedule, the course duration based on the complexity of the context, the connection with specific health institutions, and the configuration of the local intersectoral network.

The professional development of primary education methodologists in Pinar del Río, focused on providing educational support to students with low vision, proposes a strategy that integrates five areas of competence: psychopedagogical knowledge, didactic knowledge, scientific-technical knowledge, knowledge of teacher training, and educational management knowledge. This approach overcomes the fragmentation that characterizes partial approaches to professional development and proposes a strategy built on a comprehensive, multisensory, and intersectoral conception of educational support, enabling methodologists to coherently integrate it with the pedagogical practices of the region.

The results obtained demonstrate that the professional development strategy is a valid proposal in terms of theoretical relevance, internal coherence, and contextual feasibility for the Pinar del Río region. It contains concrete actions that, once implemented, will allow for the acquisition, updating, and systematization of the necessary knowledge, skills, and attitudes, strengthening professional performance and confidence in managing subordinate structures.

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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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