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Original article

Pedagogical strategy for addressing academic talent in pre-university students

Estrategia pedagógica para la atención del talento académico en estudiantes de preuniversitario

Estratégia pedagógica para a atenção ao talento acadêmico em estudantes do ensino pré-universitário

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ABSTRACT

Addressing the needs of academically gifted students is a current imperative for policymakers and educators, given the medium- and long-term influence these students can have on the scientific development of society. Hence, the importance of fostering the development of their potential within the educational process. Consequently, this article aims to share a strategy designed to improve the support process for academically gifted students in pre-university education in the province of Sancti Spíritus. The research process involved the use of theoretical methods, such as the historical-logical and analytical-synthetic approaches, to determine the foundations that underpin the support process for academically gifted students. In addition, empirical methods such as observation, interviews, and

surveys were employed to gather information related to the process under study and to design a strategy that would stimulate the development of students' talents. The opinions of the stakeholders involved in the process of supporting academically gifted students confirmed the relevance of the actions specified at each stage of the pedagogical strategy, and the results of its practical application reveal positive changes in the improvement of the support process for academically gifted students.

Keywords: support for academic talent; pedagogical strategy; pedagogical process; academic talent.

RESUMEN

La atención de los estudiantes con talento académico constituye una exigencia actual para políticos y pedagogos, dada la influencia que, a mediano y largo plazo, estos pueden tener en el desarrollo científico de la sociedad; de ahí la importancia de estimular el desarrollo de sus potencialidades desde el proceso pedagógico. En consecuencia, el presente artículo tiene como objetivo socializar una estrategia pedagógica diseñada para la mejora del proceso de atención de los estudiantes con talento académico de la Educación Preuniversitaria en la provincia de Sancti Spíritus. El proceso investigativo implicó la utilización de métodos teóricos, como el histórico-lógico y el analítico-sintético, para la determinación de los fundamentos que sustentan el proceso de atención de los estudiantes con talento académico, y de métodos empíricos, como la observación, la entrevista y la encuesta, con la finalidad de obtener información sobre el proceso estudiado y diseñar, como resultado, una estrategia que estimulara el desarrollo de las potencialidades talentosas de los estudiantes. El criterio de los actores que participan en el proceso de atención de los estudiantes con talento académico confirmó la pertinencia de las acciones precisadas en cada etapa de la estrategia pedagógica, y los resultados de su aplicación práctica revelan transformaciones favorables en la mejora de dicho proceso.

Palabras clave: atención al talento académico; estrategia pedagógica; proceso pedagógico; talento académico.

RESUMO

A atenção aos estudantes com talento acadêmico constitui uma exigência atual para políticos e pedagogos, dada a influência que, a médio e longo prazo, estes podem ter no desenvolvimento

científico da sociedade; daí a importância de estimular o desenvolvimento de suas potencialidades a partir do processo pedagógico. Em consequência, o presente artigo tem como objetivo socializar uma estratégia desenhada para a melhoria do processo de atenção aos estudantes com talento acadêmico em estudantes da Educação Pré-universitária na província de Sancti Spíritus. O processo investigativo envolveu a utilização de métodos teóricos como o histórico-lógico e o analítico-sintético para a determinação dos fundamentos que sustentam o processo de atenção aos estudantes com talento acadêmico; além de métodos empíricos como a observação, a entrevista e o inquérito com a finalidade de obter informações relacionadas ao processo que se estuda e que permitissem desenhar, como resultado, uma estratégia que estimulasse o desenvolvimento das potencialidades talentosas dos estudantes. O critério dos atores que participam no processo de atenção aos estudantes com talento acadêmico confirmou a pertinência das ações precisadas em cada etapa da estratégia pedagógica, e os resultados de sua aplicação prática revelam transformações favoráveis na melhoria do processo de atenção aos estudantes com talento acadêmico.

Palavras-chave: atenção ao talento acadêmico; estratégia pedagógica; processo pedagógico; talento acadêmico.

INTRODUCTION

The development of academic talent in students is a topic of growing relevance in today's educational context, both nationally and internationally. The ability to identify these students, as well as to stimulate and enhance their development, is essential to guarantee them a successful personal and professional future and, in this way, enable them to contribute to the sustainable social and economic development of their countries (Hernández Carabalí et al., 2025).

In Cuba, the comprehensive education of students is a priority of the education system and, as part of it, particular attention to academically talented students is required (Navarro Quintero & Valle Lima, 2024); however, this process faces significant challenges that limit the identification, stimulation and development of academic talent in students at different educational levels. Moreover, despite the efforts made by scholars of the subject, theoretical, methodological and practical problems persist that result in a lack of integrative strategies to guide administrators and teachers in improving the process of attention to academically talented students in pre-university education.

Although there is theoretical and methodological knowledge on the subject, most studies focus on what is meant by academically talented students and their characteristics (Fernández Cabezas, 2024; Hernández Carabalí & Massani Enríquez, 2018; Renzulli & Reis, 2018; Rodríguez Pérez et al., 2019), on the different stages through which their attention passes, and on the possible modalities to be used (Govea Arias et al., 2024; León Arencibia et al., 2019; Oliva Hernández & Pita Boffill, 2019; Reyes Rodríguez & Vizcaíno Escobar, 2022).

These approaches emphasize the importance of the active participation of academically talented students, the necessary personalization of activities and the role of the teacher or trainer as mediator in order to ensure the development of students' talent potential. However, the lack of integration of the actions in each stage of the process of attention to academically talented students and the limited use of opportunities to create synergies among the agents and agencies of the educational community restrict the application of the proposals analyzed, which calls for the renewal or design of coherent and effective pedagogical strategies.

The literature review makes it possible to adopt the definition of talent given by Vera Salazar & Vera Salazar (2024):

A psychological configuration of the personality that dynamically integrates general (intelligence) and special abilities, intrinsic motivation and creativity, which can condition success in a personally and socially valuable context of human activity (p. 8).

Likewise, academic talent is analyzed as a qualitatively superior psychological formation characterized by satisfactory results in one or more areas of knowledge, high levels of motivation for learning, a distinctive learning style and the capacity to assume or propose changes in the school, family and social context (Rodríguez Pérez et al., 2019). In addition, the characteristics recognized in talented students are high general and special abilities, high motivation for learning and creativity (Vera Salazar & Vera Salazar, 2024).

Furthermore, it is considered that the process of attention to talented students is a complex and multifactorial social process that passes through three interrelated stages, identification, stimulation and development, for which three modalities are used: acceleration, grouping and enrichment (Tchipaco Tchipaco et al., 2022). The school, the community and the family play an important role in this process, and their actions must coherently integrate the various spheres of life and human activity, as well as the action of various agents (Fernández Cabezas, 2024).

Strategy is assumed as a type of scientific result which, according to Rodríguez and Rodríguez (2011), requires:

A certain ordering of actions in the course of solving a problem, in which each step is necessary for the next. These sequences of actions are strongly oriented towards the goal to be achieved. Persistence in a procedure or its change is also related to the success achieved in attaining a goal (p. 34).

From the above, it follows that a pedagogical strategy consists of:

The projection of pedagogical management that allows the transformation of a system, subsystem, institution or educational level to achieve the proposed goal, and which conditions the establishment of actions to obtain changes in the dimensions involved in achieving that goal (Rodríguez & Rodríguez, 2011, p. 38).

Given the above, the objective of this article is to present a pedagogical strategy designed to improve the process of attention to academically talented students in the area of exact and natural sciences in pre-university education. This proposal not only contributes to closing the gaps identified in the literature on the subject but also offers a replicable model that can be adapted to different educational contexts.

MATERIALS AND METHODS

This section describes the methodological design of the research, which followed a predominantly quantitative approach that required the use of theoretical and empirical methods for a better understanding of the process of attention to academically talented students and of the behaviors and results of the participants in that process. Its general approach was based on educational action research, with the purpose of prioritizing the transformation of practice through a reflective and systematic process.

The research was carried out at the Provincial Training Center for High Academic Performance (CEPARA) in Sancti Spíritus, Cuba, between January 2023 and December 2025. The academically talented students of this center were taken as the unit of study.

The population consisted of its 98 students (10th to 12th grade), and the sample was selected by stratified random sampling, with strata defined by grade and by the subject in which students had talent potential. From the total eligible, 7 students per grade were randomly selected, ensuring that all subjects in the science area were represented, which resulted in a sample of 21 participants.

The study was carried out in two interrelated methodological stages. In the first, the theoretical foundations underpinning the pedagogical strategy proposed as a result of the research were determined; this required the use of theoretical methods such as the historical-logical and analytical-synthetic methods, which made it possible to determine the state of the art and to specify the theoretical framework adopted regarding the process of attention to academically talented students and its opportunities for improvement.

In the second stage, a diagnosis of the process of attention to academically talented students was carried out and, based on the regularities identified, the pedagogical strategy was designed. At this point, empirical methods were used to obtain information on the process under analysis, together with statistical-mathematical methods that facilitated the organization and analysis of the results. The interview and the survey of students provided information on their experiences and expectations regarding the process of attention to academically talented students and, in particular, the development of their potential. Observation, in turn, made it possible to learn about the experiences, expectations and opportunities for improvement of this process.

The instruments designed included aspects or questions of interest according to the objective of the article and the theoretical positions adopted. For validation prior to use, the observation, interview and survey guides were analyzed in an in-depth session with specialists in the attention to academically talented students; in addition, the questionnaire and the interview were applied to other subjects with characteristics similar to those of the sample, which led to their improvement and final design.

RESULTS

First, a diagnosis was made that allowed an in-depth analysis of the state of development of academic talent in the students and the causes that influenced it. The triangulated analysis of the quantitative data obtained from each of the three instruments and the qualitative assessments of the students made it possible to identify the following regularities of interest for the research:

- 71.4% (15) stated that a person is talented if he or she has a high capacity to learn, excels and shows willingness and interest in learning more. The rest associated it only with the grades they obtained. It was striking that none of them referred to motivation as an important element.
- 90.5% (19) identified themselves as academically talented students, but acknowledged that they still had much to learn and should devote more time to study. They also insisted that their identification and attention should have taken place from primary school.
- 80.9% (17) recognized themselves as talented because they participated in competitions, were part of the national preselection and had achieved a high level of skill development. In this case, they did not refer to their motivation to study either.
- 90.5% (19) referred to one or more of the following characteristics: studious, concerned, interested, intelligent, organized, dutiful, disciplined, efficient, responsible, hard-working and persevering. None of them considered themselves a creative, innovative student who loves science and scientific activity.
- 100% (21) stated that they received training two or three afternoons every eleven days, and only some said that they studied independently every day. They highlighted the role of the trainers and the need to carry out other activities in different contexts.
- 100% (21) recognized training as the main form of attention and insisted that they almost always solved complex problems or exercises; many felt that they could have more exchanges with scientists and visits to scientific institutions.
- 90.5% (19) mentioned that when they made mistakes solving problems, they always looked for new strategies, and that they were constantly encouraged to study more and to do research. Some expressed satisfaction at being able to help their classmates.
- 66.7% (14) expressed dissatisfaction with the little time the institution devotes to competitors, since they have to attend all class periods and content they already master, and pointed out the need to improve the identification process, since some students at the center are not talented.

The results described and the concerns and expectations confirmed revealed the need to make changes in the process of attention to academically talented students, in the authors' opinion in at least three essential directions: contributing to their comprehensive education, moving coherently through the three stages of the process and acting through the three recognized modalities of attention.

In view of this reality, the hypothesis emerged of the need for a pedagogical strategy that would contribute to improving the process of attention to academically talented students and its results. The pedagogical strategy designed by the authors of the article is described and explained below.

The pedagogical strategy presented has the following structure: general objective; stages (diagnosis, planning and implementation), which specify objectives, actions and general methodological guidelines; and, finally, general recommendations for its implementation and evaluation. It is also characterized by being developmental, systematic, systemic, flexible and multifactorial, and by an approach that integrates didactic and extracurricular actions for the comprehensive development of academically talented students.

Its developmental character is manifested in fostering the development of students' cognitive and socio-affective potential from a comprehensive and personalized approach; its systematic character, in the possibility and need for permanent and interrelated implementation of the proposed actions; and its systemic character, in the possibility and need to carry out the actions of the different stages as part of a system in which all components and actors of the education system work in an interrelated manner.

Moreover, its flexibility offers the possibility of enriching and updating the actions according to the results obtained; its multifactorial character, the possibility and need to take advantage of the participation and collaboration of all actors in the educational community with the potential to contribute to the attention of talented students; and, finally, its integrative character is revealed in the coherent articulation of didactic actions and extracurricular activities in which a diversity of actors from the educational community participate.

To ensure its success in practice, the following requirements should be met:

- Prepare administrators and teachers theoretically and methodologically to design, implement and monitor the process of attention to academically talented students.
- Raise the awareness of all actors in the educational community regarding the process of attention to academically talented students.
- Use differentiated pedagogical and didactic strategies that favor the comprehensive development of talented students based on a flexible curricular conception.
- Stimulate the development of intelligence, creativity and critical and reflective thinking in academically talented students.

- Promote the active and systematic participation of academically talented students in the activities planned for their attention.
- Ensure the contextualization of the activities and tasks designed for the attention of academically talented students.
- Ensure guidance and emotional support services for students so that they can manage the pressures and expectations of the activities they carry out.

The general objective of the pedagogical strategy is to improve the process of attention to academically talented students for the study of exact and natural sciences. Its organization takes into account the basic tasks for the attention of academically talented students, identification, stimulation and comprehensive development, viewed in this case as stages that guide the actions of administrators, teachers and students.

Stage for the identification of academically talented students

Its objective is to identify, in the different institutions and educational levels, academically talented students in the area of exact and natural sciences. It therefore focuses on recognizing talented or potentially talented individuals and on their in-depth diagnosis, in order to then make decisions and design attention actions, and it is assumed as a systematic, systemic and multifactorial task. It should take affective-motivational factors into account as important predictors, and its main pool should be competition winners and students with marked cognitive interest, high academic performance and notable results in a specific area.

Actions: selection of methods and design of instruments for identifying academically talented students; application of the instruments designed; processing of the information obtained and preliminary determination of talented students in each subject; analysis, in the different institutions and educational levels of the province, of the students identified; determination of the strengths and difficulties for their attention; and awareness-raising among the students identified and the actors able to stimulate their development.

The following methodological guidelines are offered for its implementation:

- Ensure that identification is led by the Provincial Training Center for High Academic Performance (CEPARA) and integrate into a multidisciplinary team all levels and community factors able to provide information.

- Ensure the use of varied methods that facilitate the proper identification of academically talented students, among them document review, interviews, pedagogical tests, observation, tests to assess intelligence and creativity, and case studies.
- Design instruments (guides, questionnaires and tests) that favor the identification of relevant results in an area of knowledge and of students' characteristics in the cognitive, learning, motivational and socio-affective areas.
- Ensure that the instruments designed are applied systematically and with high scientific rigor, always creating a favorable and transparent climate that facilitates the proper identification of academically talented students.
- Ensure that the instruments designed are applied in all educational institutions; professionals and students with recognized academic talent may participate in this, which would facilitate peer communication, understanding of personality characteristics and the exchange of lived experiences.
- Prepare the administrators and teachers responsible for applying the instruments designed, as well as university students linked to the educational institutions for their work-placement tasks.
- Use each of the instruments designed to learn about students' academic performance, learning strategies and styles, development of creativity, perseverance, motivation, interest and capacity to assume or propose changes.
- Keep a field diary that summarizes the characteristics of each student with the potential to be selected as talented.
- Carry out a subsequent case study to deepen the comprehensive diagnosis of each student who may be selected.
- Analyze all the actors who may influence the stimulation and development of the selected talented students, administrators, teachers, families and the students themselves, in order to agree on criteria for the strategies to be designed.
- Explain to the selected students the working conception for their attention and the importance of their individual and collective preparation in order to stimulate and develop their talent.
- Determine the strengths and difficulties for their attention, specifying possibilities and times for grouping, availability of materials, possible approaches and trainers to whom they may be linked, among other aspects.

Stage for stimulating the potential of academically talented students

This stage should be assumed with a multidimensional character that brings together the efforts of all actors in the educational community and considers cognitive, social and socio-affective needs (Castro Quiroz et al., 2022). Its objective is to design and implement actions that stimulate the development of students' talent potential.

The actions are: incorporation of students into interest circles or scientific societies according to their educational level; appointment as monitors in the natural and exact science subjects in which they have talent potential; incorporation into social, technical or research projects; holding knowledge meetings that promote the exchange of knowledge (competitions, olympiads, cups and others); and visits to research centers in the community.

Other actions would be exchanges among talented students of the same subject but from different educational levels; exchanges with former talented competitors; scientific conferences and science fairs; creation of clubs or teams that facilitate the grouping of students; enrollment in complementary courses covering content of interest to them; and radio or television programs that promote the study of science and recognize the achievements of talented students.

Methodological guidelines for implementing the actions:

- Incorporate students into interest circles, societies or scientific groups where they lead and carry out activities that allow them to develop theoretical and research skills, as well as creativity and motivation for science.
- Appoint them as monitors so that they carry out tasks that allow them to deepen their study of theoretical content and develop their communication skills.
- Incorporate them into social, technical or research projects of their own institution or others, where they can carry out activities to develop research skills and creativity and contribute ideas for solving problem situations.
- Hold knowledge meetings that allow them to train and demonstrate their preparation for solving theoretical, practical and experimental problems. These may be competitions, olympiads or cups commemorating historical dates of each science.
- Promote and carry out visits to research centers in the community where activities related to the area of their talent potential are carried out, and foster familiarization with new technologies and vocational guidance actions.

- Hold exchanges with other talented students and former talented students where they can analyze their experiences, discuss expectations related to the study of science and their preparation, and propose new actions.
- Hold scientific conferences and fairs where students can have training sessions and competitive activities, interact with talented students, scientists and researchers, and develop exhibitions on science topics.
- Create clubs, groups or other working arrangements that facilitate their grouping and whose activities allow the exchange of experiences, collaborative work and systematic attention, or attention at different stages, by a prepared trainer or facilitator.
- Develop complementary courses in which students deepen and broaden curricular or extracurricular content related to their area of knowledge.
- Produce radio or television programs that promote the study of science, publicize the activities carried out and recognize students' achievements.

Stage for the comprehensive development of academically talented students

In this stage, the methodological and didactic work of teachers plays a significant role, since attention to students is an essentially didactic process complemented by extracurricular activities. This requires actions related to the planning, implementation and monitoring carried out by teachers, trainers and facilitators, as well as actions to be carried out by the students themselves.

The actions consider the three modalities for attention to academically talented students, acceleration, grouping and enrichment, although these may be interrelated. General actions addressing the didactic components and specific actions linking the acceleration and enrichment modalities are proposed; these may or may not involve grouping students according to their level of development and the intention of each action. Hence, the objective of this stage is to contribute to the comprehensive development of academically talented students for the study of exact and natural sciences.

General actions for teachers: formulation of teaching-learning objectives that promote the development of students' academic talent according to the modalities to be used and the corresponding activities; selection and organization of the natural or exact science content to be considered for the proposed activities; selection of the (problem-based) methods and procedures to be used; selection and design of the media to be used (traditional or new technologies); selection

and design of the types of tasks to be used (problems, experiments, demonstrations, research tasks); determination of the forms and means of assessment; selection of the forms of organization of teaching and extracurricular work; and specification of the role of the participants in each form of organization.

Specific actions to be carried out by teachers: determination of the areas and content of the natural and exact sciences to be addressed in curriculum acceleration or enrichment actions; design of specific programs that include the selected content; advisory sessions that guide and accompany students in the study and deepening of topics of interest; design of research projects that foster critical thinking and creativity; and creation of learning networks that promote interaction, collaboration and debate among students.

Other actions are: organization of tutoring systems that allow exchanges among students of different educational levels; lectures, seminars and workshops that foster theoretical study and the development of specific and socio-emotional skills in students; design of a virtual environment or classroom that takes advantage of all the tools of the Moodle platform for the attention of students; and workshops or talks to guide families in supporting academically talented students.

Actions for students: proposing curricular or extracurricular areas and content they feel they can work on; enrolling in and completing complementary courses (associated with the selected natural and exact science content) where they analyze topics of interest; carrying out the tasks assigned as part of the advisory sessions they receive; leading or participating in research project tasks; participating in and proposing activities in the learning networks; and carrying out tutoring activities that allow them to interact with academically talented students of different educational levels.

The following actions are also included: participation in lectures, seminars and workshops; preparation of study guides, summaries and other materials for use in training sessions or in the attention of talented students at lower levels; taking examinations or activities that are part of the competitions (school, municipal, provincial and national), cups and olympiads in which they participate; and solving the exercises, problems and experimental and research tasks assigned as part of the different activities and training sessions.

Methodological guidelines for implementing the general actions:

- Objectives should respond to students' cognitive, social and emotional needs and foster curriculum acceleration and enrichment.
- Content should be selected and organized according to the different modalities (grouping, enrichment and acceleration) and differ from that of the general curriculum. Knowledge, specific, general and socio-emotional skills, and the attitudes and values of a future scientist should be analyzed.
- When selecting methods, priority should be given to those that correspond to students' cognitive activity, problem-based, partial heuristic search and research methods, which together stimulate the development of creativity and critical thinking.
- Media should be selected and designed according to students' development. Priority should be given to the use of information and communication technologies, as well as to the search for and exchange of media among students.
- The selection of task types should foster creativity and allow students to propose new types. Problem-solving, experimental, demonstration and research tasks, among others, should predominate.
- Forms and means of assessment should be differentiated and should stimulate development, metacognition, reflection and interpersonal relationships, always focusing on achievements and on setting new learning goals.
- Diverse forms of organization should be used, taking into account individual and group work, fostering acceleration and grouping and stimulating the development of talent potential. In all of them, students should be active participants, and the participation of actors from the educational community should be encouraged.

Methodological guidelines for implementing the specific actions:

- To determine the areas and content to be addressed, individual and group diagnosis should be taken into account and, accordingly, it should be specified which can be addressed in class and which in other acceleration or enrichment actions.
- Specific programs should be designed according to the selected areas and content of the natural and exact sciences. These should specify ideas related to all components of the teaching-learning process and methodological guidelines for their development in different contexts.

- Advisory sessions should be organized to ensure student guidance, the specification and study of content, the solution of tasks and other activities that stimulate their development. Advice may be organized by educational level, topic or a specific context. Advisors may be trainers, teachers, university students and scientists with the potential and willingness to collaborate.
- Research projects should foster critical thinking and creativity and be related to topics of interest to students and of impact on society. Experimental and demonstration tasks may be set, always flexible and open to new proposals from students, thus stimulating the presentation and discussion of the results obtained.
- To create learning networks, it is suggested that students at the same level of development be grouped and that an advising teacher be appointed to act as mediator and guide. The planned activities should be systematic and promote interaction, collaboration and debate among students.
- Tutoring can make talented students responsible for attending to students with similar abilities but at lower educational levels. Various activities can be carried out as part of tutoring, always guided by responsible teachers and previously coordinated with the educational levels.
- Lectures, seminars and workshops should be held to foster theoretical study and the development of specific and socio-emotional skills in students. These may be part of the programs designed or of other actions.
- The Moodle platform should be used for the attention of talented students; it should foster exchange, propose flexible tasks and enhance the participation of other actors in the community. A virtual classroom can be designed for each subject in the science area to plan the attention of students at different educational levels.
- Workshops and talks on communication among students, cognitive performance and learning styles, coping with success and failure, motivation, stress tolerance and self-esteem are recommended.

Methodological guidelines for implementing the students' actions:

- Students should be considered the protagonists of the activities or tasks to be carried out and should be motivated, persevering and independent.
- Students should be given opportunities to propose areas and content in which they need or prefer to go deeper.

- Students should be informed about the complementary courses in which they can enroll and their participation should be encouraged; these may be held at their own institution, at others in the community or online.
- While carrying out tasks, students should work independently and then share their results, strategies and possible conflicts. Students themselves may suggest new tasks.
- Through learning networks and tutoring sessions, students should be able to contribute to the development of academically talented students at the same or lower educational levels. To this end, they can support problem solving, prepare study guides, summaries and other materials, and collaborate in applying instruments for identifying talented students.
- Students should participate in as many competitions, cups and olympiads as possible to evaluate their achievements and compare themselves with themselves, train in more complex exercises and practice taking tests that may cause concern and stress due to their own expectations and those transmitted by classmates, teachers and family.

Finally, the general recommendations for the implementation and evaluation of the pedagogical strategy are specified.

The pedagogical strategy was designed to improve the process of attention to academically talented students in pre-university education, those trained at or from the Vocational Pre-university Institute of Exact Sciences (IPVCE); hence this center is responsible for its practical application. In this regard, its administrators and teachers play an important role, although those linked to CEPARA in particular should be the protagonists.

Furthermore, for its implementation, coordination among the different educational levels and with other institutions with the potential to contribute to the development of students' academic talent must be ensured beforehand. It is also essential to provide theoretical and methodological preparation for the teachers, trainers and facilitators who will participate in the actions planned for the different stages, as well as for the other actors of the educational community involved.

Although the identification stage is systematic, at the beginning of each school year a cut-off can be made to specify the students selected in each subject, organized by municipality, school and grade, in order to plan how they will be attended to from the IPVCE. The actions for stimulating and developing academically talented students in the natural or exact sciences should be incorporated into the institution's comprehensive educational project to ensure their planning and implementation,

make them sustainable over time and ensure that the whole educational community knows them and recognizes their importance.

Coordination with the Provincial General Directorate of Education and its counterparts in each municipality should also be prioritized to support the activities to be carried out and, in particular, the participation of students. In addition, arrangements should be made with the institutions and actors of the educational community who will participate in each action, activity or task.

Evaluation, viewed as a process, will consider two aspects: the analysis of the relevance of each proposed action and its effect on the attention process and on the comprehensive development of students, as well as on the other participants. On the one hand, the information obtained should lead to the redesign and improvement of the planned actions or the inclusion of others, while making it possible to analyze and assess students' cognitive, motivational and socio-affective achievements. This will also involve designing new actions for their attention. In both cases, diverse instruments should be applied and the participation of all actors encouraged in order to gather information that facilitates decision-making for the improvement of the process of attention to academically talented students.

DISCUSSION

The research process made it possible to recognize the following as the main theoretical and practical findings associated with the process of attention to academically talented students: its current importance for the development of society and in the educational context, its multifactorial nature and the need for early identification and attention (Vera Salazar & Vera Salazar, 2024), as well as the focus on students' comprehensive education, combining knowing, being and doing (Mosquera Suárez, 2021). In the authors' opinion, these elements explain the significance of the pedagogical strategy designed to attend to each student according to his or her potential and needs (Hernández Carabalí & Massani Enríquez, 2018).

Its analysis, through in-depth sessions with specialists and actors participating in the process under study, identified as limitations that could affect the effectiveness of the strategy the preparation, awareness and commitment of administrators and teachers to lead the process of attention to academically talented students, as well as the conditions of each context and participant. These elements are addressed explicitly or implicitly in the strategy itself; however, they may be examined

more closely in future research, considering the criteria of Gerónimo Viera and Rodríguez Picornell (2025). Along these lines, Castro Antonio et al. (2019), in *Mendive. Revista de Educación*, showed that teacher professional development is an indispensable condition for attending to schoolchildren with academic talent, which coincides with the requirement of prior preparation of administrators and teachers set out in the strategy.

Furthermore, the proposal integrates three essential aspects: it analyzes the process of attention to talented students from a perspective that goes beyond the academic sphere and the teaching-learning process, it emphasizes that it is a multifactorial process (Villanueva Betancourt & Casar Espino, 2020), and it considers its systemic and systematic nature based on the tasks or phases through which it passes.

In line with these statements, various authors agree on the need for differentiated and multifactorial educational attention for academically talented students. Hernández Carabalí and Massani Enríquez (2018) argue that identifying and enhancing the development of these students is a challenge for contemporary Psychology and Pedagogy, and that there is consensus on the need for educational institutions to implement strategies that offer each student the attention he or she requires, in accordance with his or her potential and needs. For their part, Vera Salazar & Vera Salazar (2015) define talent as a psychological configuration of the personality involving components of the cognitive and motivational-affective spheres, and identify three main modalities of educational attention to talent: acceleration, grouping and enrichment, the latter being the most widely used and accepted.

Likewise, León Arencibia and Dorvigny González (2019) address the education of academic talent through the teaching of Physics at the pre-university level, highlighting that this process must be directed with motivation, encouragement and stimulation of human potential, taking into account the sociocultural context and the student's daily relationships. In line with the above, Navarro-Saldaña et al. (2022) emphasize that academic talent requires favorable individual conditions and social factors for its development, as well as an environment that responds effectively to the particular needs of these students.

In conclusion, the results show that the implementation of the actions of the pedagogical strategy contributed to improving the process of attention to academically talented students in the area of exact and natural sciences. The following indicators are noteworthy when comparing two periods (school years 2022-2023 and 2025-2026): number of students participating in provincial

competitions (rose from 194 to 684), number of medals in national competitions (rose from 28 to 45), the province's national ranking (improved from 11th to 6th place), number of students in the national preselection (rose from 6 to 18) and number of international medals (rose from 1 to 8).

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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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