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# HISTORY AND IMPACTS OF THE PARINTINS MATHEMATICS OLYMPIAD (OPM): A JOURNEY OF LEARNING, CHALLENGES, AND ACHIEVEMENTS

# HISTÓRIA E IMPACTOS DA OLIMPÍADA PARINTINENSE DE MATEMÁTICA (OPM): UM PERCURSO DE FORMAÇÃO, DESAFIOS E CONQUISTAS”

# HISTORIA E IMPACTO DE LA OLIMPIADA MATEMÁTICA PARINTINS (OPM): UN VIAJE DE ENTRENAMIENTO, DESAFÍOS Y LOGROS

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## ABSTRACT

This article aims to present the development, challenges, and achievements of the Parintins Mathematics Olympiad (OPM). To this end, we sought to analyze the historical trajectory of the OPM since its inception, identifying its pedagogical, social, and institutional impacts on the development of mathematics education in the municipality of Parintins. The methodological approach adopted was qualitative, descriptive, and historical-documentary in nature, also configured as a case study. The research was conducted through interviews with the founder of the competition, as well as the analysis of official documents and records from previous editions of the event. The object of study is the trajectory of the Parintins Mathematics Olympiad from 2004 to 2024. The results obtained throughout the analyzed period indicate that the OPM has played a fundamental role in strengthening mathematics education in Parintins. Since its creation, the number of participating schools has grown significantly, encompassing both urban and rural areas. Among the main challenges faced are the maintenance of continuous financial support, the expansion of participation from rural schools, and the need to consolidate a permanent network for teacher training linked to the project.

**Keywords:** Mathematics Education. History of the Olympiad. Learning.

## RESUMO

Este artigo visa apresentar o percurso de formação, desafios e conquistas da Olimpíada Parintinense de Matemática. Para tanto buscamos analisar a trajetória histórica da OPM desde sua criação, identificando seus impactos pedagógicos, sociais e institucionais no desenvolvimento do ensino de Matemática no município de Parintins. A metodologia utilizada

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foi a qualitativa, descritiva e de caráter histórico-documental, configurando-se também como um estudo de caso, foi desenvolvida por meio de entrevistas com o idealizador da competição, além da análise de documentos oficiais e de registros das edições anteriores da competição. O objeto de estudo é a trajetória da Olimpíada Parintinense de Matemática entre os anos de 2004 e 2024. Os resultados obtidos ao longo do período analisado indicam que a OPM tem desempenhado um papel fundamental no fortalecimento do ensino de Matemática em Parintins. Desde sua criação, o número de escolas participantes cresceu significativamente, abrangendo tanto a zona urbana quanto a zona rural. Entre os desafios enfrentados destacam-se a manutenção de apoio financeiro contínuo, a ampliação da participação das escolas rurais e a necessidade de consolidar uma rede permanente de formação docente vinculada ao projeto.

**Palavras-chave:** Educação Matemática. História da Olimpíada. Aprendizagem.

**RESUMEN**
Este artículo tiene como objetivo presentar la formación, los retos y los logros de la Olimpiada Matemática de Parintins (OPM). Para ello, se analiza la trayectoria histórica de la OPM desde su creación, identificando sus impactos pedagógicos, sociales e institucionales en el desarrollo de la enseñanza de las matemáticas en el municipio de Parintins. La metodología empleada fue cualitativa, descriptiva e histórico-documental, configurándose además como un estudio de caso. Se desarrolló mediante entrevistas con el creador de la competición, así como el análisis de documentos oficiales y registros de ediciones anteriores. El objeto de estudio es la trayectoria de la Olimpiada Matemática de Parintins entre los años 2004 y 2024. Los resultados obtenidos durante el periodo analizado indican que la OPM ha desempeñado un papel fundamental en el fortalecimiento de la enseñanza de las matemáticas en Parintins. Desde su creación, el número de escuelas participantes ha crecido significativamente, abarcando tanto zonas urbanas como rurales. Entre los retos a los que se enfrenta el proyecto se encuentran mantener el apoyo financiero continuo, ampliar la participación de las escuelas rurales y la necesidad de consolidar una red permanente de formación docente vinculada al mismo.

**Palabras clave:** Educación Matemática. Historia de la Olimpiada. Aprendizaje.

## 1 INTRODUCTION

Pedagogical practice needs to adapt to current times, where information and technology impose on us increasingly greater and more complex challenges in our so-called knowledge society. In this context of change, it is necessary to seek a new posture and way of working with the discipline of Mathematics.

Freire (2007) advises that, "mathematical knowledge is not predetermined, but arises from the coordination of the actions of the mathematical subject and is projected as reflected abstraction (reflective abstraction with awareness)". The author is corroborated by Ghedin (2007) who states "in mathematics nothing is free, everything is built".

In this sense, the process of construction of mathematical knowledge can take place in several ways and the insertion of the Olympiads in the panorama of public education can be one of them. Since its first edition in 2004, the OPM has consolidated itself as an important public policy in the area of Mathematics Education in Parintins, currently in its XVII edition, the OPM has reached, according to Araújo et al (2025), a total of 61 registered schools and 13,797 participating students, configuring itself as an event of great educational and social relevance. In view of this scenario, the present study seeks to answer the following question: What was the historical path of the OPM and its impact on the development of Mathematics teaching in the municipality of Parintins?

The Parintinense Mathematical Olympiad (OPM) is an initiative with the purpose of stimulating interest in Mathematics among basic education students in the municipality of Parintins and region and also aims to reduce the high rates of failure and dropout in this discipline, providing students with a differentiated view and greater interactivity by developing logical ability, creativity and sociability, as well as appropriate methods of thinking and mathematical work.

The Pedagogical Political Project (PPC, 2021), of the Mathematics Degree Course at the Center for Higher Studies of Parintins of the University of the State of Amazonas (CESP/UEA), aims among its objectives "to train the Mathematics teacher to carry out their professional activities in schools of the public and private education systems, in the exercise of teaching in Elementary School from 6th to 9th grade and High School" PPC (2021, p.40).

The aforementioned PPC, adapting to the teacher training policies present in the Brazilian legislation, among which we highlight LDB 9.394/96 and the CNE/CP Opinion 28/2001, highlights that: "the pedagogical project must include other activities of a scientific, cultural and academic nature, enriching the teacher's training process as a whole" (BRASIL,

1996). In addition, the National Common Curriculum Base (BNCC) reinforces the importance of methodologies that promote meaningful learning and the development of complex cognitive skills, such as problem solving, logical reasoning and argumentation, in this way, the Parintinense Mathematical Olympiad also aims to contribute to the training of mathematics teachers and consequently, aims to improve the quality of teaching in Parintins

Methodologically, the research adopted a qualitative approach, based on the analysis of official documents of the OPM, regulations, minutes, reports and dissemination materials, and on interviews with creators and former students. Orality, as Gerhardt and Silveira (2009) argue, was essential for the collection of evidence and for understanding the evolution and impact of OPM over the years.

The scarcity of systematized records on the history and contributions of the OPM reinforces the importance of this study, which seeks to fill a gap in the literature on scientific Olympiads in the Amazon and offer subsidies for future research on the impact of these initiatives on education.

Thus, the article is organized into four main sections. The theoretical framework referring to the origins of the main mathematical Olympiads. The methodology that classifies the present work in a qualitative research. The third section, Results and discussions, summarizes the historical path of OPM and the evidence on the pedagogical and social effects of the initiative, correlating them with theoretical references on teaching and learning. Finally, the last section presents the final considerations, in which the contributions of the study and perspectives for future research are pointed out.

## 2 THEORETICAL FRAMEWORK

According to Torrente and Reis (2023) in 1934, the 1st Mathematical Olympiad was held in the city of Leningrad. In 1959, the 1st International Mathematical Olympiad (IMO) was held in the city of Bucharest, Romania. In Brazil, the São Paulo Academy of Sciences (APC) created the São Paulo Mathematical Olympiad (OPM) in 1977. In 1979, the Brazilian Mathematical Olympiad (OBM) was created, organized by the Brazilian Mathematical Society (SBM). The 1st edition of the Brazilian Public School Mathematics Olympiad (OBMEP) was held in 2005, with the participation of more than 10 million students, placing Brazil as the world record holder in number of participants in Mathematics competitions.

Fonseca et al (2025) states that in the northern region of Brazil, the municipality of Parintins has held the Parintinense Mathematical Olympiad (OPM) since 2004. The

competition aims to stimulate interest in mathematics, identify talents and strengthen the teaching of the discipline in the local context, and is organized by the Center for Higher Studies of Parintins (CESP), of the University of the State of Amazonas (UEA).

The Brazilian Public School Mathematics Olympiad (OBMEP) is an important public policy to promote Mathematics (through the study of the subject, teacher training, talent identification, etc.). Created in 2005, OBMEP reaches 99% of Brazilian municipalities. It is an initiative of the Institute of Pure and Applied Mathematics (IMPA), with the support of the Brazilian Mathematical Society (SBM), and is funded by the Ministry of Education (MEC) and the Ministry of Science, Technology and Innovation (MCTI).

In IEDE (2024) we can observe the results in OBMEP numbers, where it is possible to verify that schools awarded in OBMEP have

> **a) Better results in the SAEB, in Mathematics.** There is a significant correlation between the results of the schools in the OBMEP (in the 2nd phase) and their performance in the SAEB. Units awarded medals in OBMEP perform better in the SAEB in Mathematics, reaching higher averages (270.3 and 288.8 in the final years of Elementary School and High School, respectively). The non-awarded and/or non-participating schools and those awarded with honorable mention had lower averages: in the final years of Elementary School, they were 240.2 and 257.5, respectively, and, in High School, 269.8 and 276.9.
> **b) Better results in Enem, in Mathematics.** There is also a high correlation between the performance of schools in the OBMEP and in the National High School Exam (Enem). Schools awarded with medals in OBMEP perform better in Enem, in Mathematics, reaching higher averages (516.1). Schools that did not award and/or did not participate and those that received

The objectives of the Mathematical Olympiad are in accordance with the contemporary educational panorama, based on the development of cognitive skills in the teaching of mathematics.

The National Common Curriculum Base (BNCC) reinforces the importance of methodologies that promote meaningful learning and the development of complex cognitive skills, such as problem solving, logical reasoning and argumentation. According to the document, the teaching of Mathematics should go beyond the simple memorization of procedures, favoring the construction of mathematical thinking through challenging and contextualized situations, which encourage the active participation of students (Brasil, 2018).

Santos (2019) states that the Mathematical Olympiads are for all those who like to think, especially for children, young people and educators. We believe that the Scientific

Olympiads in general do not presuppose that students should already like to reason to participate in the competition, but rather that by participating in the competition the student develops the taste for thinking, since they stimulate and disseminate knowledge and interest in mathematics and science, awakens in students the interest in mathematical challenges and the resolution of problem situations, they develop reasoning and improve the quality of teaching.

According to Puldeco and Zimer (2018), Problem Solving can be understood as a teaching methodology, which aims to develop student-centered work, which is led to build mathematical knowledge through the elaboration and use of strategies to seek solutions to the problem situations proposed in the mathematical activity.

Azevedo (2020) approaches mathematical research recognizing the role of problem situation recognition, the process of formulating conjectures, testing, and the eventual refinement of conjectures. And, finally, to the argumentation, demonstration and evaluation of the answer worked, it should be noted that all these ingredients are common when answering a question about the Olympics.

In this context, the Mathematical Olympiads have provoked reflections on their possible contributions to the improvement of the teaching strategies adopted in the classroom. More than a competitive event, the Olympiads have inspired teachers and schools to incorporate pedagogical practices based on problem solving, mathematical research and active learning, essential components for an innovative and meaningful approach to the teaching of Mathematics.

Despite its broad reach and its growing institutionalization in the scope of Basic Education, the Mathematical Olympiads are still often understood only as meritocratic competitions, disconnected from everyday pedagogical practices. Vale (2025) highlights that this limited view obscures the formative potential of these initiatives, which, if properly incorporated into the school pedagogical project, can contribute significantly to the transformation of Mathematics teaching.

The Mathematical Olympiad can help educators through training courses, effectively contributing to good school performance and active participation in society. In addition, it also aims to reduce the high failure rates in Mathematics and dropout in this subject.

As Torrente and Reis (2023) highlight in the Mathematical Olympiads, the focus is not on formulas and products, but on knowing how to think/reason, demonstrating a development of mathematical logical reasoning.

Finally, we agree with Santos (2019) when the author proposes that the Mathematical Olympiads in schools rescue what sometimes seems lost in the school benches of our public schools: the pleasure of reasoning and understanding.

## 3 METHODOLOGY

The research was characterized as qualitative, descriptive and historical-documentary, also configuring itself as a case study. The object of study is the trajectory of the Parintinense Mathematical Olympiad between the years 2004 and 2024. The methodological procedures involved:

The documentary survey was based on the analysis of institutional records, minutes, evidence, reports and photographs of the OPM editions; Semi-structured interviews were conducted with the creator teacher and organizers and former students of the competition via application message. To analyze the results, we used Content Analysis – according to Bardin (2011), using it to identify thematic categories related to origin, evolution, impacts and challenges; and the triangulation of data for the crossing of information obtained through the different collection instruments.

## 4 RESULTS AND DISCUSSIONS

### 4.1 HISTORY AND CHALLENGES OF THE PARINTINENSE MATHEMATICAL OLYMPIAD (OPM)

The Parintinense Mathematical Olympiad (OPM) was created in 2004 as an extension initiative of the Center for Higher Studies of Parintins (CESP), of the University of the State of Amazonas (UEA), with the objective of stimulating interest in Mathematics among public school students. According to the creator of the competition, Professor Francisco Eteval da Silva Feitosa, "the first edition had the participation of state and municipal schools in the urban area, in addition to the Padre Vitório School, located in the municipal prison. The Olympiad was organized by grade and awarded students with symbolic medals."

Thus, the records presented by Reis (2017) and Oliveira (2017), which indicated the beginning of the OPM in 2005, are rectified. According to the creator's report, OPM was consolidated as an extension project of UEA involving schools in the urban and rural areas of Parintins, distributed in seven levels of competition, covering from the 6th to the 9th grade of Elementary School and High School. A striking aspect of the first edition was the

participation of people deprived of liberty, highlighting the potential of education as an instrument of social rehabilitation.

In addition to encouraging students, OPM sought to mobilize the academics of the Mathematics Degree course and bring the University closer to the school community. The institutional records of the time mention, among the members of the coordination, professors Francisco Eteval da Silva Feitosa, Ana Acácia Pereira Valente, Aurélia Nogueira, Elizabeth Blanco and Isabel do Socorro Lobato Beltrão.

The logistics of the first edition was a great challenge. According to Feitosa, "the printing and distribution of the tests to the participating schools were moments of great apprehension". The students with the best performance received symbolic awards, such as trophies and medals. The first two editions were organized with seven and five levels, respectively. Among the main obstacles, the absence of financial resources, the lack of sponsorship and the limitation of personnel stood out.

From the second edition onwards, the project began to have the support of CNPq, with the collaboration of the City Hall and with the active involvement of Mathematics academics, strengthening the sustainability of the initiative. Former participants reported that OPM has always made support materials available to students and teachers, such as lists of challenging questions, which contributed to the preparation of those enrolled.

In 2005, the Brazilian Mathematical Society (SBM) launched the Brazilian Public School Mathematics Olympiad (OBMEP), structured in three levels — a model that inspired subsequent editions of the OPM.

The fourth edition of OPM, held in 2007, marked a period of significant expansion. The project was approved to receive resources from the Amazonas State Research Support Foundation (FAPEAM), which made it possible to expand the activities to the municipalities of Barreirinha, Itacoatiara and Parintins. This year, the achievement of the gold medal by a visually impaired student stands out, a fact that reinforces the inclusive character of the competition.

With the strengthening of institutional partnerships, the awards have become progressively more expressive. From the 4th edition onwards, the prizes began to include school kits, scholarships, bicycles, medals and trophies, valuing the performance of students and encouraging the continuity of the project.

The following editions maintained the award pattern and expanded the recognition to outstanding students. The participation of UEA academics has intensified, both in the

preparation of students and in the application of the tests. From the 5th edition onwards, academics from other courses began to act as inspectors, promoting an interdisciplinary character in the organization of the event.

In 2008, the last edition was held under the coordination of Professor Feitosa, who, upon joining the Federal University of Amazonas (UFAM), consolidated a reference project in the interior of the state. OPM, however, remained active, maintaining partnerships with the City Hall and continuing to reveal promising talents in the exact sciences.

From 2009 (VI OPM), the coordination passed to Professor Dr. Isabel do Socorro Lobato Beltrão, who remained until 2015. During this period, the structure and format of the Olympiad were maintained and improved, and the partnership with the Municipal Department of Education (SEMED) was consolidated, allowing greater reach to rural communities.

The award continued to include bicycles and school kits, and also began to value teachers whose students obtained gold medals, recognizing the teaching role in the teaching-learning process. In addition, training courses were implemented for teachers from participating schools, with the objective of presenting methodologies and pedagogical materials used by the OPM coordination.

In 2015, during the XII OPM, a question bank was created for the preparation of the tests of the two phases of the competition. That same year, the teachers of the champion students began to receive cell phones as a prize, in recognition of their contribution to the success of the students.

In general, the 2016 reports reveal the logistical difficulties faced by students in rural areas, especially dropout during the second phase of the competition. One of the causes identified was the holding of the tests on Saturdays, which prevented the participation of some students for religious reasons. In addition, the drought that occurred between the months of August and September made it difficult for students from rural areas to travel by river, compromising the presence of these participants in the final stage of the Olympiad.

In 2017, during the XIV edition of the OPM, the coordination began to be led by Professor Pedro Sílvio Rodrigues Coimbra, who maintained the advances already consolidated and implemented important structural changes. Among the main changes, the change in the day of the second phase stands out, which started to take place on Sundays, in order to expand the participation of students and minimize the logistical and religious barriers identified in previous years.

In 2020, the coordination of the Parintinense Mathematical Olympiad (OPM) was taken over by Professor Dr. Paulo Sérgio da Silva, who maintained the improvements promoted by his predecessors and introduced new initiatives, such as the creation of the official OPM website. This digital environment began to disseminate announcements, training lists, calendars and relevant information to students and teachers, strengthening the institutional bond and expanding the visibility of the project.

However, still in 2020, in the face of the COVID-19 pandemic, the OPM was temporarily suspended. In this context, the website has become an essential tool for maintaining contact with students, enabling remote problem-solving courses and other continuing education actions. Despite the efforts, health restrictions made it impossible to hold the Olympiad in person that year.

In 2021, OPM's face-to-face activities resumed. On June 11, at 8:30 am, an opening live was held that marked the beginning of the registration period, which extended until June 30.

Students in the urban area were instructed to access the official website of the OPM, in the *Registration* tab, and register online, informing their full name, school, Mathematics teacher and level of participation. Students from rural areas, on the other hand, registered directly with the Mathematics teachers of their schools, following the same procedure adopted in previous editions.

The first phase of the XVI OPM was scheduled for September 10, 2021, at 8 am, and took place in two formats, due to the sanitary measures still in force: face-to-face, with printed tests for students in the rural area, and online, for students in the urban area of the municipality of Parintins.

The second phase of the Parintinense Mathematical Olympiad (OPM) was scheduled for September 11, 2022, on the premises of the Center for Higher Studies of Parintins (CESP/UEA), in a face-to-face format and subject to the current epidemiological circumstances. Due to health restrictions, the OPM was held over two years (2021/2022), which generated specific challenges. One of them was the significant absence of students from the 3rd year of High School in 2021, since the second phase only occurred in 2022, when many of these students had already passed entrance exams, resulting in an approximate dropout rate of 50%.

Despite the difficulties, the Municipality of Parintins maintained its institutional partnership, contributing with the donation of cell phones, tablets, medals and trophies for the

awarded students. The award ceremony took place with a reduced number of participants, in compliance with the health protocols resulting from the COVID-19 pandemic.

In 2023, under the coordination of Professor Dr. Júlio Cezar Marinho da Fonseca, OPM maintained its collaboration with the Parintins City Hall, which continued to support the students' awards. The prizes offered included notebooks and cell phones, reinforcing the recognition of student performance and encouraging the engagement of participants.

Continuing education courses for teachers and specific training for students classified for the second phase were maintained. In addition, scientific initiation projects were developed, with the objective of evaluating the impacts of the XVII OPM on the teaching of Mathematics, strengthening the link between competition and educational research.

In 2025, some students awarded at the XVII OPM were invited to participate in the "Olympic Problem Solving" course, held every two weeks on Saturdays. This initiative aims to deepen students' knowledge of problem-solving techniques, stimulating logical reasoning, creativity and continuous interest in Mathematics.

Throughout its history, OPM has undergone several structural and regulatory transformations. In the first editions, the competition had seven levels, and the training lists were inspired by the tests of the Brazilian Mathematical Olympiad (OBM) and books of mathematical curiosities. According to Fonseca (2025), there is a positive correlation between student performance in OPM and OBMEP, as schools awarded in OPM tend to maintain good results in OBMEP as well, reflecting the consolidation of a culture of excellence in Mathematics.

Currently, the Parintinense Mathematical Olympiad (OPM) is in its 17th edition, celebrating the success of students from rural areas, who have won gold medals at the levels in which they compete. This result represents a significant milestone in valuing education in the most remote communities. At the same time, the official OPM website is being updated, with the aim of recording the progress of the project and documenting the trajectory of former participants who stood out in their professional careers, highlighting the formative and social impact of this long-term educational initiative.

## 4.2 CURRENT STRUCTURE OF OPM

The Parintinense Mathematical Olympiad (OPM) has consolidated itself as a structured and institutionally recognized educational initiative, supported by the Municipality of Parintins, SEMED, SEDUC and local companies. Its official documentation — regulations,

reports and minutes filed at the Center for the Improvement of Mathematics Teaching (NAEM) — ensures the continuity and transparency of the project, recording quantitative and qualitative indicators on performance, participation and management.

The OPM is currently composed of three levels: Level 1 (6th–7th grades of Elementary School), Level 2 (8th–9th grades) and Level 3 (High School and EJA). The competition is organized in two phases: an objective test, applied in schools under the supervision of CESP/UEA professors and academics, and a discursive test, aimed at the 5% of students with the best performance. This structure combines multiple-choice assessment and open-ended questions, promoting the articulation between logical reasoning and mathematical argumentation.

In addition to the tests, OPM promotes continuing education for Mathematics teachers, focused on the elaboration and analysis of problems, strengthening the articulation between university and basic school. This formative dimension has contributed to the creation of a bank of contextualized questions and to the improvement of the teaching of Mathematics in the public network.

The award, held in partnership with the City Hall and the private sector, includes students, teachers and schools with medals, trophies and technological equipment, recognizing academic merit and encouraging students to remain in the field of Mathematics.

Recent adaptations, including the incorporation of digital tools and the improvement of evaluation and classification criteria, reinforce OPM's commitment to innovation, inclusion and pedagogical excellence, consolidating it as a regional model for promoting the teaching of Mathematics and encouraging participation in the Brazilian Public School Mathematics Olympiad (OBMEP).

## 5 IMPACTS OF THE PARINTINENSE MATHEMATICAL OLYMPIAD

The holding of mathematical Olympiads has been consolidated as an effective strategy to encourage learning and the appreciation of science in Brazil. Among these initiatives are the Brazilian Mathematical Olympiad (OBM), the Brazilian Public School Mathematics Olympiad (OBMEP) and, at the local level, the Parintinense Mathematical Olympiad (OPM), created with the purpose of promoting interest, logical reasoning and excellence in the teaching of this subject.

Established in 2005, OBMEP emerged as an action of the Institute of Pure and Applied Mathematics (IMPA), in partnership with the Ministry of Education (MEC), the Ministry of

Science, Technology and Innovation (MCTI) and the Brazilian Mathematical Society (SBM), aiming to encourage the study of mathematics among public school students, identify talents and contribute to the improvement of basic education in the country (Strategic Support Center, 2011). Studies carried out by the Center for Strategic Studies (2011) indicate that participation in Olympiads such as OBMEP has a positive impact on students' general school performance, expanding their opportunities for entry into higher education and developing relevant cognitive and socio-emotional skills.

These results corroborate the idea that the insertion of students in challenging contexts, such as mathematical competitions, favors not only formal learning, but also the integral formation of the student. Participation in Olympiads stimulates affective bonds with the school, promotes self-confidence, strengthens self-esteem and awakens an investigative and critical posture in the face of knowledge. By interacting in situations that transcend the school routine, the student perceives mathematics as a living language, endowed with beauty, logic and applicability in the understanding of natural and technological phenomena.

In this context, the Parintinense Mathematical Olympiad (OPM) emerges as a regional experience of great educational and social relevance. According to Da Fonseca et al. (2025), OPM seeks to overcome recurring challenges in mathematics teaching, such as difficulty in interpreting statements, lack of concentration, lack of logical reasoning, and obstacles related to algebra, arithmetic, geometry, and problem-solving content that require strategic thinking and spatial visualization.

Structured in phases and levels corresponding to the different stages of basic education, OPM adopts an approach that values comprehension and reasoning to the detriment of simple memorization of formulas. This conception is supported by Torrente and Reis (2023), when they state that progressively organized Olympiads allow the identification and development of talents from basic education, stimulating successful academic trajectories.

The convergence between OPM, OBM and OBMEP lies in the emphasis on higher-order mathematical thinking, according to Bloom's taxonomy (1956), which highlights the skills of application, analysis and synthesis as essential for meaningful learning. The preparation of students for OPM mobilizes cognitive and metacognitive skills that are directly reflected in school performance and in the formation of positive attitudes towards mathematics.

Research such as those by Carneiro (2004) and Badaró (2015) shows that training for the Olympics, centered on problem solving, stimulates creative and analytical thinking. In the same direction, Dante (2007) emphasizes that problem solving develops initiative, exploratory spirit and intellectual autonomy in the student. In addition, Polya (1995) argues that the systematic practice of problem solving constitutes the central axis of mathematical learning, as it promotes logical, critical and creative reasoning, fundamental aspects for active and transformative learning.

In this way, OPM has consolidated itself as a training space that transcends competition. It represents an environment of learning and appreciation of mathematical knowledge, capable of strengthening the bond between university and school, expanding the pedagogical repertoire of teachers and enhancing the protagonism of students. Its impacts go beyond performance in tests, reflecting in the construction of a more inclusive, participatory and socially significant mathematical culture in the Amazonian context.

## 6 FINAL CONSIDERATIONS

The historical and documentary analysis of the trajectory of the Parintinense Mathematical Olympiad (OPM) shows that its creation and consolidation represent a significant milestone in the valorization of mathematics teaching in the municipality of Parintins and in the lower Amazon region. Since its first edition, in 2004, the OPM has been configured as a space for scientific dissemination and citizenship training, joining efforts between universities, schools and public authorities in favor of a more inclusive, participatory and contextualized mathematics education.

The results obtained demonstrate that OPM goes beyond the competitive character, assuming a formative and social dimension. The involvement of teachers, managers and academics of the Mathematics degree reinforces the extension nature of the project, enabling the exchange between theory and practice, in addition to contributing to the initial and continuing training of teachers. There is also a significant increase in the participation of schools in rural areas, which reflects the organization's commitment to the democratization of access and educational equity.

From a pedagogical point of view, OPM has favored the development of higher cognitive skills, aligned with Bloom's taxonomy (1956), such as analysis, synthesis and application. By stimulating logical reasoning and problem solving, the Olympiad promotes significant learning, as advocated by Dante (2007) and Polya (1995), contributing to the

strengthening of mathematical thinking and to the formation of autonomous, critical and creative students.

In addition, the reports and documents analyzed indicate positive impacts on the self-esteem and motivation of the participants, revealing that public recognition through medals, awards and honorable mentions has a direct influence on the permanence and engagement of students with mathematics. The experience of competition thus becomes a space for belonging and valuing scientific knowledge, strengthening links between the different levels and institutions of the educational system.

The OPM, therefore, proves to be an initiative with a lasting formative and social impact. Its continuity over two decades, even in the face of logistical, financial, and pandemic challenges, demonstrates its relevance as a public policy for valuing mathematics.

In summary, the results and discussions presented reaffirm that the Parintinense Mathematical Olympiad is not limited to a competitive event, but constitutes a structuring educational movement, guided by the principle of inclusion and the belief in the transformative power of mathematics teaching. Its historical path reveals a successful experience of articulation between university and school, capable of inspiring policies and practices aimed at promoting excellence and equity in the teaching of mathematics in local and regional contexts.

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