



## Reflections of modern mathematics during the 1970s in Mato Grosso: traces of teaching professionalization

Laura Silva Dias\*, Diogo Ferreira Jandrey and Edilene Simões Costa dos Santos

Programa de Pós-Graduação em Educação Matemática, Universidade Federal de Mato Grosso do Sul, Av. Costa e Silva, s/n., 79070-900, Pioneiros, Mato Grosso do Sul, Brasil. \*Author for correspondence. E-mail: [silva.alaura@hotmail.com](mailto:silva.alaura@hotmail.com)

**ABSTRACT.** The present article analyzes traces of the dissemination of information about the Modern Mathematics Movement, published in newspapers and magazines from the state of Mato Grosso, Brazil, during the 1970s, which, as channels of information, contributed to the professionalism and professionalization of teachers in Mato Grosso. The news was found in the Brazilian Digital Newspaper Library. Following the theoretical-methodological assumptions of cultural history, we adopted Dominique Julia for the interpretation of school culture, Burke for the analysis of knowledge orders, and Oliveira to address the issue of professionalization and professionalism. As a result, we found some initiatives of the Department of Education and Culture of the State of Mato Grosso, as well as the production of materials to train teachers for the demands of the time, such as the production of books and specialized journals in education developed by the Department of Education and Culture itself. In addition, we noted the existence of specialization courses taught at the Federal University of Mato Grosso by Professor Osvaldo Sangiorgi, which contributed to the professionalization of teachers in the State of Mato Grosso, in accordance with the legislation at that time. We can observe that, as in other states, the modern mathematics movement was also present in Mato Grosso.

**Keywords:** history of mathematics education; teacher training; Mato Grosso; modern mathematics movement.

### Reflexos da matemática moderna durante a década de 1970 em Mato Grosso: vestígios de uma profissionalização docente

**RESUMO.** O presente artigo analisa vestígios de disseminação de informações sobre o Movimento da Matemática Moderna veiculados em jornal e revista do estado do Mato Grosso, Brasil, durante os anos 1970, que, por serem canais de informação, colaboraram para a profissionalidade e profissionalização do professor mato-grossense. As notícias foram encontradas na Hemeroteca Digital Brasileira. Seguindo os pressupostos teórico-metodológico da História Cultural, adotamos Dominique Julia para interpretação da cultura escolar, Burke para análise de ordens de conhecimento e Oliveira para abordar o tema referente à profissionalização e profissionalidade. Como resultado, encontramos algumas iniciativas da Secretaria de Educação e Cultura do estado de Mato Grosso, assim como a produção de materiais para capacitar professores para as demandas do período, como a produção de livros e revistas especializadas em Educação elaborados pelo próprio departamento de Educação e Cultura. Além disso, identificamos a existência de cursos de especialização ministrados na Universidade Federal de Mato Grosso, pelo professor Osvaldo Sangiorgi, que contribuíram para a profissionalidade docente no estado de Mato Grosso em conformidade com a legislação vigente do período. Podemos notar que, assim como em outros estados o Movimento da Matemática Moderna também esteve presente em Mato Grosso.

**Palavras-chave:** história da educação matemática; formação de professores; Mato Grosso; movimento da matemática moderna.

### Reflexiones sobre la matemática moderna durante la década de 1970 en Mato Grosso: rastros de profesionalización docente

**RESUMEN.** En nuestro artículo, buscamos analizar los rastros de la difusión de información sobre el Movimiento Matemático Moderno en periódicos y revistas del estado de Mato Grosso durante la década de 1970. Considerando los periódicos y revistas como canales de información que colaboraron a la profesionalidad y profesionalización del maestro de Mato Grosso, adoptamos los supuestos teórico-metodológicos de la Historia Cultural, como Dominique Julia, para la interpretación de la cultura escolar, Burke para el análisis de los órdenes de conocimiento y, para abordar el tema relativo a la profesionalización

y el profesionalismo, adoptamos, como referencial de Oliveira. Las noticias utilizadas en el artículo se encontraron en la Hemeroteca Digital de Brasil. Como resultado, encontramos algunas iniciativas del Departamento de Educación y Cultura del estado de Mato Grosso, así como la producción de materiales para capacitar a los profesores para las demandas de la época, como la producción de libros y revistas especializadas en Educación preparadas por el propio Departamento de Educación y Cultura, demarcando la presencia del Movimiento Matemático Moderno en el estado de Mato Grosso. Identificamos la existencia de cursos de especialización impartidos en la Universidad Federal de Mato Grosso por el profesor Osvaldo Sangiorgi, que contribuyeron a la profesionalización de la enseñanza en el estado de Mato Grosso en cumplimiento de la legislación vigente en la época.

**Palabras-clave:** historia de la educación matemática; formación de profesores; Mato Grosso; movimiento matemático moderno.

Received on June 8, 2022.  
Accepted on January 12, 2023.

## Introduction

With the promulgation of Law No. 5,692/1971, which establishes the guidelines and bases for the teaching of the 1st and 2nd grades in Brazil, initiatives of the Department of Education and Culture (*Secretaria de Educação e Cultura* – SEC) of the state of Mato Grosso, Brazil, are observed to disseminate information about the new law and to make it teachable through projects and courses for Mato Grosso teachers in response to the demands of classroom performance.

One change brought about by Law No. 5,692/1971 was the modification of the 2nd grade education, which began to have as its main objective the professionalization of the students, given the need for a qualified workforce for the country since in the 1970s Brazil was experiencing a period of economic expansion, with accelerated industrialization and growth expectations (Beltrão, 2017).

Using the concepts of professionalism and professionalization, based on Oliveira (2018), for the analysis of teacher education in relation to the activity of teaching and teacher training, we understand professionalization as “[...] official, institutional processes of the trajectory that allow analyzing the transformation process of the teacher's craft into a profession” (Oliveira, 2018, p. 16). Thus, in this article, the professionalization brought about by the promulgation of Law No. 5,692/1971 led to a change in the way of teaching in the classroom. There was a need to educate teachers about the goals of the new law and the changes necessary to act in the classroom in order to meet the requirements.

Professionalism, according to Oliveira (2015), is understood as knowledge about the subject to be taught, about the students and their prior knowledge, their development, forms of learning and teaching practices. Through this, it will be possible to find traces of a constitution of professional knowledge, understood from the perspective of Hofstetter and Schneuwly (2017).

Therefore, the professional performance of the teacher during the period delimited for this article should be in line with the guidelines proposed by the promulgation of Law No. 5,692/1971, which favored the ideas disseminated by the Modern Mathematics Movement (MMM), as they were in line with the economic policy adopted by the country and the technicist conception of the law (França, 2012, p. 46), considering the need to “[...] provide the student with the necessary formation for the development of their potentialities.”

During this period, there were professional training courses for teachers in Mato Grosso, following the guidelines established by Law No. 5.692/1971 and in line with the ideals of the MMM. In addition, the presence of its main representative, Professor Osvaldo Sangiorgi, in the state of Mato Grosso was noted, as evidenced by Dias' dissertation (2020), which presents signs of teacher professionalism and professionalization based on initiatives of the SEC of the state of Mato Grosso in the 1970s.

In this article, we want to analyze the traces of the dissemination of information about the MMM, which contributed to the professionalism and professionalization of teachers in Mato Grosso. To do this, we chose to analyze the information published in the newspaper<sup>1</sup> *O Estado de Mato Grosso* during the 1970s, since we found references to the MMM and its effects in other states.

The study draws on Julia (2001) for the interpretation of school culture, Burke (2016) for the analysis of knowledge orders, and Oliveira (2015; 2018) for professionalism and professionalization.

<sup>1</sup> The newspaper was found in the Brazilian Digital Newspaper Library, which includes newspapers, magazines, yearbooks, bulletins, and more in its collection of periodicals. The website can be visited at the following address: <https://bndigital.bn.gov.br/hemeroteca-digital/>

Our article is structured as follows: we provide a brief overview of the MMM, with the aim of understanding some characteristics of this pedagogical wave, the training of teachers who taught mathematics during the times of modern mathematics in Brazil, and the dissemination of information about the MMM in the state of Mato Grosso.

## A brief overview of the Modern Mathematics Movement in Brazil

To provide an overview, we conducted a bibliographical analysis of the MMM to briefly clarify its characteristics and dissemination, which have influenced the teaching and training of mathematics teachers in Brazil.

The introduction of the MMM into the Brazilian educational context took place during the 1960s, initially in the state of São Paulo. According to Pinto, Felisberto and Barticelli (2020), it was a time when Brazil was experiencing industrial expansion, with much discussion about technological advances, the democratization of education, the expansion of higher education offerings, and, consequently, the need for qualified workers and the pursuit of meeting various demands of societal development.

With the aim of a “[...] better mathematical education for citizens in general, which, as was then recognized, the economic, scientific and technological evolution [...]” (Guimarães, 2007, p. 42), discussions about the modernization of mathematics education were initiated. The Royaumont Conference was an important stimulus.

After the conference, Brazil and the United States established partnerships that sent Brazilian teachers to the United States for internships. One of them was Osvaldo Sangiorgi, who studied at the University of Kansas.

According to Rios, Búrigo and Oliveira Filho (2011), after returning from Kansas, Sangiorgi<sup>2</sup> organized a teacher training course in São Paulo in 1961, which led to the creation of the Study Group on Mathematics Teaching (*Grupo de Estudos em Ensino de Matemática – GEEM*).

The GEEM aimed to write textbooks, organize congresses, symposia, and teacher training courses related to modern mathematics. Initially, these proposals were for secondary education only<sup>3</sup>, but later they were adopted for primary education as well<sup>4</sup>. The ideas advocated by GEEM at congresses and other events gained significant traction, leading the group to become prominent not only in São Paulo but throughout Brazil (Rios et al., 2011).

From 1970, the work developed by GEEM was strongly influenced by Dienes, with the dissemination of his methodology and the use of logical blocks. According to Búrigo (1989), Dienes’s work, along with Piaget’s discoveries, was the most significant effort to provide a coherent pedagogical proposal. Consequently, the theory proposed by Dienes was valued by GEEM because it “[...] filled a gap in activity models, operationalizing the structuralist approach to mathematics” (Pinto et al., 2020, p. 84). Thus, we can conclude that the courses promoted by GEEM influenced teachers’ teaching methods by offering new tools for this purpose.

## The Modern Mathematics Movement and teacher training

In this section, we will present elements that helped us achieve our objective: to analyze the traces of the dissemination of information about the MMM that contributed to the professionalization of teachers in Mato Grosso teaching mathematics. In this regard, we highlight important points for the foundation of our article, such as professionalization, professionalism, and school culture.

In the 1970s, according to França (2012), there were significant changes in economic, social, political and educational aspects. In this context, Law No. 5.692/1971 was created, which established the guidelines and bases for the teaching of the first and second grades, with the aim of providing an educational formation with a vocational emphasis.

According to Saviani (1999, p. 23), the promulgation of this law materialized the attempt to professionalize students for the labor market by formalizing a “[...] technician orientation based on principles of rationality, efficiency and productivity.” França (2012, p. 46) emphasizes that the law favored “[...] the technician approach, aiming to meet the demand for technicians at the middle level and to reduce the pressure on higher education.”

---

<sup>2</sup> Osvaldo Sangiorgi was recognized by the Brazilian elite as an excellent teacher and for his academic training at the University of São Paulo. He was one of the teachers who did an internship in the United States, at the University of Kansas, where he had his first contact with the ideas of modernizing the teaching of mathematics. Due to the circumstances of the political and economic context of the 1960s, he influenced the educational process regarding the teaching of mathematics since he had easy access to the public sphere, maintained relationships with newspaper editors and had easy access to the media (Sangiorgi, 2008).

<sup>3</sup> Secondary education would currently correspond to high school.

<sup>4</sup> Primary education would currently correspond to elementary school.

According to França (2012), the overall objective, based on the Law of Guidelines and Bases (*Lei de Diretrizes e Bases* – LDB) of 1971, was to provide an education that would develop potentials such as self-realization, qualification for work, and preparation for citizenship. To achieve these objectives, it was necessary to mobilize actions that provided ways to disseminate information in schools through new methods of teacher training. We can conclude that the promulgation of Law No. 5,692/1971 brought about changes in the professionalism and professionalization of teachers.

We understand professionalization and professionalism as:

Professionalization is understood here through official, institutional processes, from the trajectory that allows analyzing the transformation process of the craft of teaching into a profession. Meanwhile, professionalism refers to the ways of professionalizing the teacher – i.e., becoming a teacher in the face of the daily challenges of the classroom (Oliveira, 2018, 14).

Therefore, in the present article, professionalization is understood as the institutionalized processes that define the teaching profession with actions to act in the classroom to constitute the professional characterization of teaching. Professionalism is linked to actions that influence the teacher's knowledge.

It is emphasized that “[...] professionalization and professionalism are concepts strictly related to the activity of teaching and teacher training [...]” (Oliveira, 2018, p. 16), in line with perspectives according to which the teaching profession, in its different statuses and levels, has points where it is possible to problematize the knowledge to which it refers and that constitutes the “expertise” of the profession.

Thus, we understand that the professionalism of teachers who taught mathematics underwent changes with the dissemination of LDB/1971 and the proliferation of training courses. These changes had an impact on initial teacher education, teacher training and the way teachers acted. Therefore, a reorganization of school culture is evident during this period.

We understand school culture as

[...] a set of rules that define the knowledge to be taught and the behaviors to be instilled, and a set of practices that allow for the transmission of this knowledge and the incorporation of these behaviors; norms and practices coordinated with purposes that may vary according to time (religious, sociopolitical, or simply socialization purposes) (Julia, 2001, p. 10).

Thus, we understand a reorganization of the rules for educational institutions that define the knowledge to be taught and a new set of practices disseminated by the MMM that allow the dissemination of this knowledge.

For this article, we set out to analyze traces of the dissemination of information about the MMM, which contributed to the professionalization and professionalization of teachers in Mato Grosso, at a time when the SEC aimed to produce materials to train teachers to work in the classroom. Thus, through the news, it was possible to observe the diffusion of the MMM in the State of Mato Grosso, in order to inform different audiences about the “new Mathematics.”

For Fiorentini (1995, p. 17), the purpose of mathematics education during this period was “[...] to develop computational and manipulative skills and attitudes, enabling students to solve exercises or standard problems.” The changes in education were driven by the need for vocational skills and the development of technologies, which were reflected in the sciences as a means of stimulating the economy.

In the MMM, structuralism predominated “[...] as a way of thinking about scientific production, analyzing social reality based on the construction of models that explain how relationships occur based on what they call structures” (França, Silva, & Guimarães, 2020, p. 47).

The official courses offered by GEEM aimed at introducing new concepts and renewing the mathematical language, without intending to replace a degree in mathematics.

The courses were divided into phases. In the first stage, disciplines focused on the mathematical education of teacher-students were offered, such as Set Theory, Mathematical Logic, and Modern Practices, aimed at the execution of classes by the participants in the schools where they taught. In the second stage, the disciplines Modern Algebra I, Vectors and Analytical Geometry, Probabilities were aimed at renewing the mathematical language. The third stage also provided mathematical education in the disciplines of Topology, Modern Algebra II, Linear Programming and Teaching Seminar. In summary, the courses consisted of “training” the participants to teach modern mathematics courses (Rios et al., 2011, p. 77, author's emphasis).

The concept of teacher training at that time was based on content training. The courses sought to revalue the professional culture of the teacher, “[...] reusing and at the same time complementing the initial training of teachers to adapt it to industrial, scientific, pedagogical advances, etc.” (Rios et al., 2011, p. 76).

The terms in vogue for in-service teacher training, according to Rios et al. (2011), were ‘training’, ‘refresher courses’, and ‘capacity building’ at the state and municipal levels of education as short courses promoted by the Brazilian Ministry of Education and guided by Law No. 5,692/1971.

Teacher education during this period has been characterized as a transitional moment between the continuity of the professional culture of teachers teaching mathematics. With the MMM, education began to value a professionalism “[...] centered on knowledge of mathematical structure, the new mathematical language, axiomatics, with set theory as the unifying link of curricular content” (Rios et al., 2011, p. 87).

We conclude that the MMM supported the goals of LDB/1971 as highlighted by França (2012), such as education for the development of potentialities, qualification for work and preparation for the conscious exercise of citizenship. In order to achieve this goal, didactic means had to be created to disseminate Law No. 5,692/1971. Each state developed dissemination strategies; thus, we observed a change in the professionalism and professionalization of the teacher since the LDB/1971 proposed new guidelines for education and the MMM brought a new methodology to teaching.

We know that the Brazilian states became aware of the MMM through Osvaldo Sangiorgi and the courses of GEEM. In the next section, we will present evidence of courses and the spread of the MMM in the state of Mato Grosso.

## Circulation of the modern mathematics movement in the state of Mato Grosso

To study the way the MMM was disseminated, in this article we set out to analyze six excerpts from the same newspaper found in the Brazilian Digital Newspaper Library. The selection of news was done by searching for the keyword ‘modern mathematics,’ followed by a reading to select those that could help answer our initial question. We understand the newspaper “[...] as a keeper of a memory that does not claim to restore memories, nor to present itself as truth, but as an element that, in the hands of the researcher, is able to inventory a past represented in print” (Santos, 2016, p. 2). To discuss the MMM in Mato Grosso, we chose information published in *O Estado de Mato Grosso* since we consider the newspaper as an informative disseminator of the existence of courses, lectures, and the impact of the movement on the population of Mato Grosso.

The news item presented in Figure 1, dated November 9, 1975, and published in *O Estado de Mato Grosso*, entitled “Is mathematics the students’ dread?”, gives a general overview of the influences of modern mathematics, evoking teaching methods and some criticisms related to the establishment of schools, based on the statements of Professor Scipione Di Pierro Neto<sup>5</sup>, who was a collaborator of the MMM.

The popularization of education was not accompanied by more realistic curriculum standards:

Unfortunately, the mistake has always been made to apply elite methods to popular schools. And the Department of Education has not yet gotten rid of it, as the professor explained when analyzing the newly published Curriculum Guides, documents that bring the official philosophy of education to all elementary schools in the state (*O Estado de Mato Grosso*, 1975a, p. 5).

We can conclude that the said popularization of education is the result of the abolition of the entrance examination provided for in Article 36<sup>6</sup> of Law No. 4,024 of December 20, 1961, which establishes the guidelines and bases of national education. This law provided for admission to the first class of the first cycle of high school courses, but after the promulgation of LDB/1971, it became the first year of the second cycle. Criticism has been expressed about the new curriculum guidelines and a certain mismatch with the usability and application in schools:

- A math curriculum guide should basically be simple and accessible to the average first- and second-grade teacher. It should also reflect the reality of our schools, which are poor schools. However, the newly published guide is presumptuous, discussing geometry through transformations in the first grade, a chapter too sophisticated for which most of our teachers are not prepared (*O Estado de Mato Grosso*, 1975a, p. 5).

We understand curriculum guides as a reference document defines content and teaching tools and plays a guiding role in the planning of activities to be developed by the teacher. These guides not only translate the content and tools that define a reform but also reflect the philosophy of those who inform them (Romeo, 1972).

<sup>5</sup> The works of Santos (2013), Laier and Valente (2015), Oliveira, Dias, and Santos (2019) indicate the use of books by Professor Scipione Di Pierro Neto in the state of Mato Grosso in the 1970s.

<sup>6</sup> “Article 36. Admission to the first class of the first cycle of high school courses shall be subject to the passing of an entrance examination certifying satisfactory primary education, provided that the student is 11 years of age or will reach that age during the academic year” (Brazil, 1961).

Therefore, we can consider the curriculum guide as a way of organizing knowledge that supports the professionalism of the teacher to act in the face of change. However, based on the statements of Professor Scipione Di Pierro Neto, the proposed curriculum guide was not sufficient to meet the demands for improvement in education because it was not adapted to the school reality, given the unpreparedness of the teachers, and consequently the mismatch affected the teaching.

The guide, according to the professor, should be made in collaboration with the University of São Paulo (through the Mathematics Institute and the Faculty of Education), with the Study Group on Mathematics Teaching and with representatives of secondary education:

- Otherwise, it will be a partial instrument, a one-sided view, things that, in my opinion, are the main flaws of the current curriculum guides, even though they have been developed by competent teachers. As they are now, they will reinforce the principle of elitism, which the main educators are already convinced must be changed (O Estado de Mato Grosso, 1975a, p. 5).

From all indications, the criticisms were related to the educational reality of the state of São Paulo. The news played the role of informing the population of Mato Grosso about the changes in education and teaching methods, along with some criticisms, such as the creation of the curriculum guide. The existence of a system of orders of knowledge is inferred, in which an unspecified organization in the news in Figure 1 developed the curriculum to be used without consulting universities, study groups or teachers.



Figure 1. Is mathematics the student's dread? Source: Newspaper *O Estado de Mato Grosso* (1975a).

Burke (2016, p. 55) clarifies that "[...] the institutions of knowledge found in a particular culture, together with the values associated with them, constitute a system." For the author, "[...] orders are not planned but are shaped by the values of the culture as well as the interaction between organizations established for specific purposes."

Pinto et al. (2020, p. 149) explain about the “[...] lack of autonomy of teachers to act in the regulation of their own profession, which is controlled by the regulatory and supervisory power exercised by the State.”

The order of knowledge is therefore part of a sociocultural order. It is possible to discern nuances of domain, control, authorities, and monopolies that have the control to approve or reject useful and useless, reliable or dubious knowledge, “[...] in effect defining what is considered knowledge and science in a particular time and space” (Burke, 2016, p. 32).

But orders of knowledge are not fixed. According to Burke (2016, p. 58), there is not a single dominant order, but a fragmentation “[...] between dominant and subordinate knowledges, which are often considered heretical by elites or, in the case of popular knowledge, relegated to the category of things that do not deserve attention.”

Thus, we mention two institutions that have within their organization knowledge that could contribute to the creation of an appropriate curriculum guide. The University of São Paulo (through the Mathematics Institute and the School of Education), with the GEEM, and the State, mentioned in the news, chose to develop the curriculum without consulting other institutions, relying solely on their own staff. This highlights the “[...] lack of consensus in the modernization of the school regarding the specific knowledge of the teacher, the absence of a consensual response in the professional literature, about the competencies necessary for teaching [...]” (Pinto et al., 2020, p. 149), which permeates a variety of orders that attest to the complexity of teacher professional training.

Drawing a balance between what was taught in schools before modern mathematics and what was taught afterwards, the teacher concludes:

- From the first to the fourth grade, mathematics should be developed through activities based on the concrete, allowing the acquisition of secure techniques and skills and the formation of the first layers of abstraction. From the fifth to the eighth grade, mathematics should continue to be based on the concrete, but it should lead first to the development of generalization and then to education.

In other words, the stages should be: first, intuition; then, generalization; and finally, education, which makes the student capable of facing new situations independently (O Estado de Mato Grosso, 1975a, p. 5).

Although the news is about the educational situation in another state, we can observe similarities with what should be taught in Mato Grosso. In Diaz's dissertation (2020), the Integrated Educational Plan of Mato Grosso (Piemat) is presented. It was created by the SEC of Mato Grosso in 1971, during the government of José Manoel F. Fragelli, and lasted until 1975. The book “Objectives of 1st Grade Teaching” and the curriculum review included in the Piemat 1971/1975 project established goals similar to those in the News.

Dias (2020), Almeida (2010), Santos (2013), and Both (2014) point to signs of the MMM in Mato Grosso, based on courses, books, interviews, and the visit of Osvaldo Sangiorgi to the state to teach courses on modern mathematics.

In the January 30, 1974, issue of *O Estado de Mato Grosso*, there is an advertisement for a course in modern mathematics to be taught by professors from the Pontifical Catholic University of Rio de Janeiro.

In Figure 2, the existence of a specific course in Modern Mathematics offered by the Federal University of Mato Grosso (*Universidade Federal de Mato Grosso* – UFMT) can be observed, advertised in *O Estado de Mato Grosso*, the primary order of information, understood according to Burke (2016, p. 56) as the “[...] predominant means of communication at a particular time and place.” In the news article titled “Patrono” (Patron), the presence of Osvaldo Sangiorgi is announced as the patron of the first graduating class of the mathematics course at the (UFMT) and a lecture on current aspects of mathematics, intended for students and teachers of the Mathematics Department of the institution. Osvaldo Sangiorgi also gave a specialization course in mathematics in 1973.

In 1974, Sangiorgi gave an interview to *O Estado de Mato Grosso* in order to discuss modern mathematics. This interview was conducted by Professor Célio Cunha of the Department of Teaching and Research (DEP/UFMT), and we infer that the message aimed to “demystify” mathematics for the newspaper's readers.

Under the title “Who is afraid of mathematics?”, Professor Célio Cunha asked Sangiorgi a series of questions, such as How did GEEM come about? What are Piaget's contributions to the reformulation of mathematics education? What are logical games? Who is afraid of mathematics? What is the importance of studying mathematics?



For Sangiorgi, Piaget brought together scholars from psychology, mathematics, logic, and pedagogy in a happy interdisciplinary encounter. From this convergence, structures common to the various sciences were outlined, and consequently, “[...] it was emphasized that mathematical structures (both objective and topological) translate the analogous structures that make up the human mind” (O Estado de Mato Grosso, 1974, p. 5).

When talking about logical games, Sangiorgi mentions Dienes and the possibilities of logical blocks for preschool education. He refers to the experience of the GEEM in 1971, in which Dienes participated and which resulted in five films in collaboration with the Educational TV of São Paulo. These films were offered for screening at the UFMT.

In the news from Figure 2, we see that Osvaldo Sangiorgi had contact with the UFMT to the extent that he even taught courses, gave lectures and gave interviews to spread the MMM. Note the extensive coverage of education in Mato Grosso and information from outside the state, such as the creation of curriculum guides.

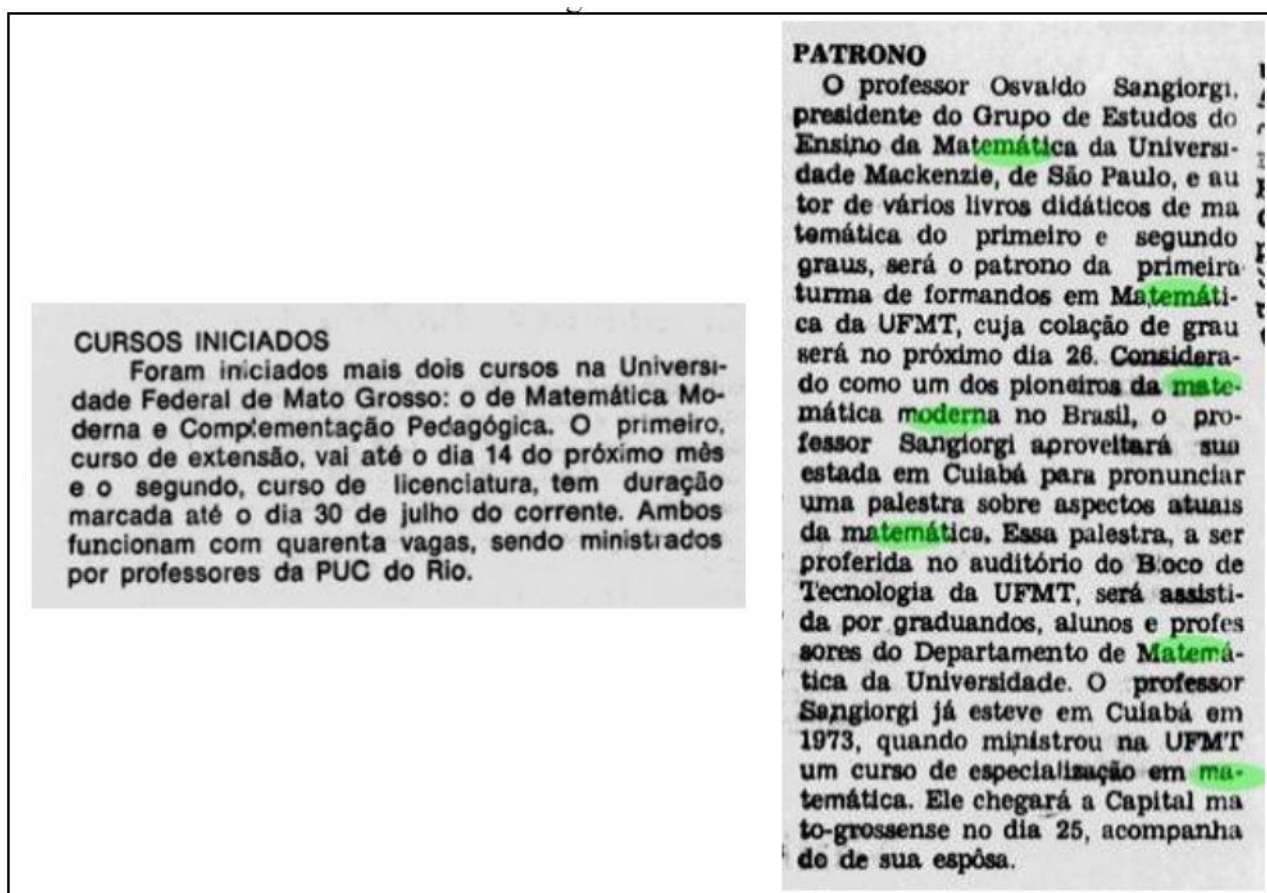


Figure 2. Newspaper ads. Source: *O Estado de Mato Grosso* (Calixto Neto, 1974).

## Approaches to the decline of modern mathematics in Mato Grosso.

*Revista Educação em Mato Grosso*, produced by the Department of Education of the SEC of Mato Grosso, was distributed in schools with the purpose of providing “[...] information related to the educational reality and to bring this information from the source, which is the educator, to the student and the entire school community” (*Revista Educação em Mato Grosso*, 1978, s/p).

In its first edition, presented in Figure 3, *Revista Educação em Mato Grosso* aimed to present a study on education in Mato Grosso from a historical perspective, discussing primary and secondary education. Being a material prepared by the Department of Education of the SEC, it can be inferred the intentions to professionalize the teachers of Mato Grosso and collaborate with the professionalism as presented by Dias (2020). The indication of its decline comes from the news in Figure 4, where the efficiency of Modern Mathematics was questioned.



REVISTA <b>BIMESTRAL – Janeiro / Fevereiro de 1978 – Nº 01</b>		<b>educação</b> em Mato Grosso	
<b>ESTADO DE MATO GROSSO</b>  GOVERNADOR JOSÉ GARCIA NETO  SECRETÁRIO DE EDUCAÇÃO E CULTURA LOUREMBERG RIBEIRO NUNES ROCHA		<b>ENFOQUES</b>  APM : uma árvore de bons frutos <span style="float: right;">3</span> Ensino Rural : a necessidade de uma nova visão <span style="float: right;">25</span> Planejamento : o início de uma tarefa <span style="float: right;">40</span> Língua Portuguesa <span style="float: right;">43</span>	
REVISTA <b>educação</b> em Mato Grosso		<b>ENSINO DE 1º GRAU</b>  Grades Curriculares <span style="float: right;">6</span>	
PUBLICAÇÃO SECRETARIA DE EDUCAÇÃO E CULTURA  EXPEDIENTE  Diretor Responsável PEDRO ROBERTO FLORES  Redação LUIZ MARIANO DE ALENCAR TEREZINHA MARQUES NUNES  Arte Final RICARDO BASTOS BUCKEN		<b>ENSINO DE 2º GRAU</b>  Exame de Classificação <span style="float: right;">12</span> Currículo Formal de Educação Geral <span style="float: right;">30</span>	
As matérias pedagógicas são produzidas pelo Departamento de Educação da SEC  Distribuição gratuita  Tiragem 5 mil exemplares		<b>CONSELHO ESTADUAL DE EDUCAÇÃO</b>  Um pouco de compreensão <span style="float: right;">13</span>	
IMPRESSO PELA  GRAFICOR		<b>PESQUISA</b>  Estudo da Educação em Mato Grosso numa perspectiva histórica <span style="float: right;">33</span>	
		<b>SEÇÕES</b>  Vocabulário Técnico <span style="float: right;">15</span> Informes <span style="float: right;">36</span>	

Figure 3. Summary of *Revista Educação em Mato Grosso*. Source: Personal collection.

The news article “Scientific Research: MEC will promote meeting,” dated June 11, 1978, announces several concerns about Brazilian education. Among them, we highlight the excerpts related to the teaching of mathematics: “[...] the teaching of modern mathematics does not provide the necessary basis for individuals to apply the knowledge acquired in more advanced studies, especially in the field of scientific research” (O Estado de Mato Grosso, 1978, p. 2). There were already discussions about the disadvantages of teaching Modern Mathematics, which were echoed by the Federal Council of Education (*Conselho Federal de Educação* – CFE).

In summary, we can say that the spread of the MMM influenced the school culture of education in Mato Grosso since the initiatives to standardize the teaching came from the SEC as a collection of different books that influenced the teaching methods of the teachers. Thus, behaviors and practices were defined that were in line with what was foreseen in Law No. 5.652/1971.

## Pesquisa Científica: MEC Promoverá Encontro

**BRASÍLIA, ANDA** — O ensino da Matemática Moderna não oferece o embasamento necessário para que o indivíduo aplique os conhecimentos adquiridos em estudos mais avançados, principalmente na área da pesquisa científica. Para solucionar o problema, o Ministro Euro Brandão, da Educação e Cultura, pretende promover um Encontro Nacional de Professores de Matemática, através do MEC.

Esta informação foi dada pelo próprio ministro da Educação, no Conselho Federal de Educação, quando comunicou ao Colegiado, que membros do Conselho Científico e Tecnológico lhe manifestaram sua preocupação com esses resultados negativos do ensino da Matemática Moderna.

Os impasses surgidos com a reunião das disciplinas História e Geografia na matéria Estudos Sociais pela Lei da Reforma do Ensino, o que vem provocando queixas alternadas, de professores de ambas, foi outra preocupação manifestada ao presidente do CFE pelo ministro Euro Brandão, bem como a necessidade urgente de uma definição para o estudo da Filosofia.

Os ecos, a respeito das desvantagens do ensino da Matemática Moderna, também recoreram no CFE e igualmente tem sido motivo de preocupação para todo o Colegiado, segundo o presidente Lafayette de Azevedo informou ao ministro. Do mesmo modo, frequentemente, professores de Geografia recorrem ao CFE, pedindo solução para

o problema, fato que, de acordo com a conselheira Esther de Figueiredo Ferraz tem sido levado em conta pelo Colegiado.

Declarando-se muito feliz com a sintonia que os problemas de ensino, em todos os níveis, encontro no DCFE, o ministro manifestou sua confiança em que tais assuntos seriam de pronto analisados e profundidade, num trabalho comum, ouvindo o conselheiro Tarcísio Padilha uma rápida exposição sobre estudos que vem procedendo, quanto ao ensino da Filosofia, destacando para o ministro Euro, tres opções que, a seu ver, podem servir de ponto de partida: 1 — Retorno da disciplina no II Grau que ele próprio considera inexistente; 2 — Inserção da disciplina em cursos de pós-graduação; 3 — Inclusão nos currículos do I Grau de cursos de graduação de nível superior. Neste sentido aliás, adiantou o professor Padilha a recomendação do CFE, porém falta instrumento legal que torne a medida obrigatória para as universidades.

O ministro Euro Brandão prometeu todo o apoio para a realização de estudos e projetos sobre os tres assuntos enfocados ouvindo do presidente do CFE que o pedido do próprio ministro em ser recebido informalmente redundou em encontros mais proveitosos do que se tivesse sido feita a sessão solene em plenário, como tinha previsto, porque os níveis de discursos apenas se pode chegar a um valioso intercâmbio de idéias sobre problemas educacionais.

Figure 4. MEC will promote meeting. Source: Newspaper *O Estado de Mato Grosso* (1978).

## Final considerations

The aim of this article was to analyze the traces of the diffusion of information about the MMM that contributed to the professionalization and professionalization of teachers in Mato Grosso. For this purpose, we used the time frame of the 1970s, a period in which Brazil experienced the MMM, widely promoted by Osvaldo Sangiorgi and the GEEM group. The characteristics of this period for the professionalization of teachers were a technicist didactics that took the center of the teaching process away from the teacher and the student and began to focus on teaching objects and techniques. We can observe this in the statements made by Professor Osvaldo Sangiorgi in the interview with Célio Castro.

We can conclude that education in Mato Grosso was influenced by the newspapers and initiatives of the SEC, which changed the professionalism and professionalization of teachers during the MMM. From the production of materials to train teachers for the demands of the time, with the production of books and specialized magazines in education prepared by the Department of Education and Culture, and with the offer of specialization courses taught at the UFMT by Professor Osvaldo Sangiorgi, contributed to the professionalism of teachers in the state of Mato Grosso, in accordance with Law No. 5.692/1971. In this way, we can affirm that the MMM was present in the state of Mato Grosso as well as in other states of the country.

In the end, we observed the germination of the spread of the movement, in an institutionalized manner, the elaboration of materials that favored the MMM, a set of norms with purposes established by regulatory institutions for the school, and the proximity of its decline.

## Acknowledgments

This work was performed with the support of the Coordination of Superior Level Staff Improvement (Capes) – Finance Code 001.

## References

- Almeida, L. I. M. V. (2010). *Ensino de matemática nas séries iniciais no Estado de Mato Grosso (1920-1980): uma análise das transformações da cultura escola* (Tese de Doutorado). Pontifícia Universidade Católica do Paraná, Curitiba.
- Beltrão, T. (2017, 3 de mar.). Reforma tornou ensino profissional obrigatório em 1971. *Senado Notícias*. Recuperado de <https://www12.senado.leg.br/noticias/materias/2017/03/03/reforma-do-ensinomediofracassou-na-ditadura>
- Both, B. C. (2014). *Sobre a formação de professores de matemática em Cuiabá - MT (1960-1980)* (Dissertação de Mestrado). Universidade Estadual Paulista, Rio Claro.
- Brasil. (1961). *Lei nº 4.024, de 20 de dezembro de 1961. Fixa as Diretrizes e Bases da Educação Nacional*. Brasília, DF: Diário Oficial da União.
- Brasil. (1971). *Lei nº 5.692, de 11 de agosto de 1971. Fixa diretrizes e bases para o ensino de 1º e 2º graus, e dá outras providências*. Brasília, DF: Diário Oficial da União.
- Búrigo, E. Z. (1989). *Movimento da Matemática Moderna no Brasil: estudo da ação e do pensamento de educadores matemáticos nos anos 60* (Dissertação de Mestrado). Universidade Federal do Rio Grande do Sul, Porto Alegre.
- Burke, P. (2016). *O que é história do conhecimento?* São Paulo, SP: Unesp.
- Calixto Neto, J. (1974, 30 de jan.). Cursos iniciados. *O Estado de Mato Grosso*. Recuperado de <http://memoria.bn.br/DocReader/DocReader.aspx?bib=098086&Pasta=ano%20197&Pesq=matematica%20moderna&pagfis=20097>
- Dias, L. S. (2020). *Os saberes para ensinar matemática nos anos iniciais: a metodologia da matemática em tempos de matemática moderna no Mato Grosso* (Dissertação de Mestrado). Universidade Federal de Mato Grosso do Sul, Campo Grande. Recuperado de <https://posgraduacao.ufms.br/portal/trabalho-arquivos/download/7883>
- Fiorentini, D. (1995). Alguns modos de ver e conceber o ensino da matemática no Brasil. *Zetetike*, 3(1), 1-38. DOI: <https://doi.org/10.20396/zet.v3i4.8646877>
- França, D. M. A. (2012). *Do primário ao primeiro grau: as transformações da Matemática nas orientações das Secretarias de Educação de São Paulo (1961-1979)* (Tese de Doutorado). Universidade de São Paulo, São Paulo.
- França, D. M., Silva, M. R. I. S., & Guimarães, M. D. (2020). Os saberes aritméticos na escola primária e as vagas pedagógicas: uma visão panorâmica. In M. C. A. Oliveira, N. B. Pinto, & W. R. Valente (Orgs.), *A aritmética, a geometria e o desenho: a matemática nos primeiros anos escolares* (p. 25-56). São Paulo, SP: Livraria da Física.
- Grupo de Pesquisa de História da Educação Matemática no Brasil [Ghemat-BR]. (2016). *Glossário*. Recuperado de <https://repositorio.ufsc.br/handle/123456789/158952>
- Guimarães, H. M. (2007). Por uma matemática nova nas escolas secundárias – perspectivas e orientações curriculares da Matemática Moderna. In J. M. Matos, & W. R. Valente (Orgs.), *A matemática moderna nas escolas do Brasil e Portugal: primeiros estudos* (p. 21-45). São Paulo, SP: Zapt.
- Hofstetter, R., & Schneuwly, B. (2017). Saberes: um tema central para profissões do ensino e formação. In R. Hofstetter, & W. R. Valente (Orgs.), *Saberes em (trans)formação: tema central da formação de professores* (p. 113-172). São Paulo, SP: Livraria da Física.
- Julia, D. (2001). A cultura escolar como objeto histórico. *Revista Brasileira de História da Educação*, (1), 9-43.

- Laier, S. S. S., & Valente, W. (2015). História de um professor: reflexões sobre o ensino de matemática em Sinop/MT – 1970/1980. *II Congresso Ibero-Americano História da Educação Matemática*, 2(1), 948-961. Brasil: Belém.
- Mato Grosso. Secretaria de Educação e Cultura. (1978). *Educação em Mato Grosso*. Cuiabá, MT: Graficor.
- O Estado de Mato Grosso. (1974, 17 de fev.). Quem tem medo de matemática? *O Estado de Mato Grosso*. Recuperado de <https://bitily.me/ENCps>
- O Estado de Mato Grosso. (1975a, 9 de nov.). Matemática é o pavor dos estudantes? *O Estado de Mato Grosso*. Recuperado de <https://bitily.me/xCrqJ>
- O Estado de Mato Grosso. (1975b, 13 de jul.). Patrono. *O Estado de Mato Grosso*. Recuperado de <http://memoria.bn.br/DocReader/DocReader.aspx?bib=098086&Pasta=ano%20197&Pesq=matematica%20moderna&pagfis=23658>
- O Estado de Mato Grosso. (1978, 11 de jun.). Pesquisa científica: MEC promoverá encontro. *O Estado de Mato Grosso*. Recuperado de <https://bitily.me/XMUPK>
- Oliveira, L., Dias, L. S., & Santos, E. S. C. (2019). A comissão do livro técnico e didático (COLTED) em Mato Grosso: um olhar às operações aritméticas de multiplicação no livro didático “matemática escola primária. *XIII Sesemat Seminário Sul-Mato-Grossense de Pesquisa em Educação Matemática*, 13(1), 132-147.
- Oliveira, M. C. A. (2015). Profissionalidade para o ensino de Geometria: um estudo a partir da legislação. *Revista de História da Educação Matemática*, 1(1), 189-202.
- Oliveira, M. C. A. (2018). Profissionalização profissionalidade. In W. R. Valente (Org.), *Cadernos de trabalho II - profissionalização/profissionalidade* (p. 11-44). São Paulo, SP: Livraria da Física.
- Pinto, N. B., Felisberto, L. G. S., & Barticelli, D. D. (2020). Métodos, processos e finalidades da aritmética na escola primária e as vagas pedagógicas. In M. C. A. Oliveira, N. B. Pinto, & W. R. Valente (Orgs.), *A aritmética, a geometria e o desenho: a matemática nos primeiros anos escolares* (p. 57-88). São Paulo, SP: Livraria da Física.
- Rios, D. F., Búrigo, E. Z., & Oliveira Filho, F. (2011). O movimento da matemática moderna: sua difusão e institucionalização. In M. C. A. Oliveira, M. C. L. Silva, & W. R. Valente (Orgs.), *O movimento da matemática moderna: história de uma revolução curricular* (p. 21-53). Juiz de Fora, MG: UFJF.
- Romeo, P. G. (1975a). Apresentação. In Centro de Recursos e Pesquisas Educacionais Professor Laerte Ramos de Carvalho [Cerhupe]. (Org.), *Guias curriculares do estado de São Paulo propostos para as matérias do núcleo comum do ensino do 1º grau*. São Paulo, SP: Cerhupe.
- Sangiorgi, O. (2008). *Oswaldo Sangiorgi: um professor moderno*. São Paulo, SP: Annablume.
- Santos, L. M. E. (2016). O jornal como guardião da memória: arte, cultura e educação: identidade e memória. In *IV Colóquio de História da Educação* (p. 1-6). Criciúma, SC.
- Santos, R. J. (2013). *História da educação matemática no estado de Mato Grosso: o movimento da matemática moderna no município de Juara no período de 1970 a 1990, a partir da Escola Estadual Oscar Soares* (Dissertação de Mestrado). Universidade Federal de Mato Grosso, Cuiabá.
- Saviani, D. (1999). *Escola e Democracia*. (32ª ed.). Campinas, SP: Autores Associados.

### INFORMAÇÕES SOBRE OS AUTORES

**Laura Silva Dias:** Doutoranda em Educação Matemática pelo Programa de Pós-Graduação em Educação Matemática (PPGEduMat) da Universidade Federal de Mato Grosso do Sul (UFMS), bolsista da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes). Integrante do Grupo de Pesquisa em História e Educação Matemática (Compasso/MS). ORCID: <https://orcid.org/0000-0002-1961-8973>  
E-mail: [silva.alaura@hotmail.com](mailto:silva.alaura@hotmail.com)

**Diogo Ferreira Jandrey:** Doutorando em Educação Matemática pelo Programa de Pós-Graduação em Educação Matemática (PPGEduMat) da Universidade Federal de Mato Grosso do Sul (UFMS), bolsista da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes). Integrante do Grupo de Pesquisa em História e Educação Matemática (Compasso/MS). ORCID: <http://orcid.org/0000-0002-0823-8318>  
E-mail: [diogojandrey@hotmail.com](mailto:diogojandrey@hotmail.com)

**Edilene Simões Costa dos Santos:** Doutorado em Educação em Ciências e Matemática pela Universidade de Brasília. Professora do Instituto de Matemática e do Programa de Pós-graduação em Educação Matemática da UFMS. Líder do Grupo de Pesquisa em História e Educação Matemática (Compasso/MS).

ORCID: <https://orcid.org/0000-0002-0509-0098>

E-mail: [edilenesc@gmail.com](mailto:edilenesc@gmail.com)

**Nota:** Laura Silva Dias, Diogo Ferreira Jandrey e Edilene Simões Costa dos Santos, declaramos que fomos os responsáveis pela concepção, análise e interpretação dos dados; redação e revisão crítica do conteúdo do manuscrito e ainda, aprovação da versão final a ser publicada.