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Northeast Science Teaching Center (CECINE) and a history of math teacher training in Brazil[1]

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ABSTRACT

In this article, we intend to present a historical version of the teachers mathematics education offered by CECINE, specifically from state of Rio Grande do Norte, the focus of our studies. For that, we handle documents constituted from a historiographical operation from the Oral History as a research methodology. This research, inserted in a proposal of a broad spectrum of the Oral History and Mathematical Education Group (Ghoem), presents as notes courses offered by CECINE in which the aim was to disseminate the Modern Mathematics in the North and Northeast of Brazil and also the offer of Short Graduation courses in Sciences, which trained teachers for these regions and also the Midwest of Brazil.

KEYWORDS: History of Mathematics Education. Science Centers. Teacher training. Historiography.

Centro de Ensino de Ciências do Nordeste (CECINE) e uma história da formação de professores de matemática no Brasil

RESUMO

Neste artigo, temos a intenção de apresentar uma versão histórica sobre a formação de professores de matemática ofertada pelo CECINE, levando em consideração mais estritamente o cenário do Rio Grande do Norte por ter sido o foco de nossos estudos. Para isso, lançamos mão de documentos constituídos a partir de uma operação historiográfica que mobilizou a História Oral como metodologia de pesquisa. Esta pesquisa, inserida em uma proposta de amplo espectro

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do Grupo História Oral e Educação Matemática, apresenta como apontamentos cursos ofertados pelo CECINE no qual buscou-se disseminar pelo Norte e Nordeste a Matemática Moderna e ainda a oferta de cursos de Licenciatura de Curta Duração em Ciências, que formou professores para atuar nessas regiões e ainda no Centro Oeste.
PALAVRAS-CHAVE: História da Educação Matemática. Centros de Ciências. Formação de professores. Historiografia.

Centro de Enseñanza de Ciencias del Nordeste (CECINE) y una historia de la formación de profesores de matemáticas en Brasil

RESUMEN

En este artículo, tenemos la intención de presentar una versión histórica de la capacitación de maestros de matemáticas ofrecida por CECINE, teniendo más en cuenta el escenario de Rio Grande do Norte, ya que fue el foco de nuestros estudios. Para eso, utilizamos documentos constituidos a partir de una operación historiográfica que utilizaba la Historia Oral como metodología de investigación. Esto estudio, insertada en una propuesta de un amplio espectro del Grupo de Historia Oral y Educación Matemática, presenta como notas los cursos ofrecidos por CECINE en los que el objetivo era difundir las Matemáticas Modernas en el Norte y Nordeste de Brasil y también la oferta de cursos de Grado a Corto Plazo en Ciencias, que capacitó a maestros para trabajar en estas regiones y en el Medio Oeste de Brasil.
PALABRAS CLAVE: Historia de la educación matemática. Centros de ciencias. Formación de profesores. Historiografía.

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Introduction

For years the research group Oral History and Math Education (Ghoem), to which we are linked, has been developing research in the most diverse regions of Brazil on the history of the formation and performance of mathematics teachers. This collective research exercise

aims to carry out a cartographic (and symbolic) mapping of the possibilities for math teacher training that have existed/exist in Brazil, seeking, perhaps mainly, the historical flows that escape the so-called traditional teaching centers, or, in other terms, the formative possibilities that have occurred outside the popularly known training centers and taken as the main or sole responsible for the institutional training of teachers of this discipline (GARNICA, 2014; 2019).

Mobilizing mainly Oral History as a research methodology, Ghoem has been able to present different historical versions and countless possibilities/mobilizations of what we have called "the history of the formation of mathematics teachers in Brazil", putting on the scene numerous courses and projects that have existed and occupied spaces of centrality in this phenomenon, but for various reasons are not known or remembered when referring to it[3].

From our researches, which aimed to understand the phenomenon of formation of math teachers in the state of Rio Grande do Norte[4], we were led, from some narratives, to get to know the Center for the Teaching of Sciences of the Northeast (CECINE), since the reports indicated courses offered by this center, until then unknown to us and still little explored in research in the History of Brazilian Mathematics Education, and led us to question: what role this institution occupied in the scenario of formation of mathematics teachers in Brazil and, in particular, in Rio Grande do Norte?

With this article we aim, therefore, to present a historical version of the training of mathematics teachers offered by CECINE, taking into consideration specifically the scenario of Rio Grande do Norte for having been the focus of our studies. However, since the center has not acted only

[3] An exemplary case, among others that we could mention by way of example, is the Campaign for the Improvement of Secondary Education Dissemination (CADES), which offered training to mathematics teachers throughout the country in the 1950s and 1960s and was little known, having already been the subject of many studies in the group. For more information about CADES, we recommend: Finato, Baraldi e Morais (2012), Baraldi e Gaertner (2013) and Miranda (2019).

[4] The research resulted in our master's and doctorate work (MORAIS, 2012; 2017).

in the training of teachers in this state and the documents referred to here, do not point out data only about this state, we understand we put to the reader a historical version that brings elements, in a broader way, about the training of mathematics teachers in Brazil.

It is worth noting that they produced the documents mobilized for this historical version from a historiographic operation that used Oral History as a research method, based on the understandings that have been produced and practiced by Ghoem (GARNICA, 2019; GARNICA; FERNANDES; SILVA, 2011). In this sense, understanding method as an inseparable articulation between theory and practical procedures, we constitute a collection of narrative documents produced from orality and many so-called "official" documents. Here, we will refer to two particular narratives, by Professors Raimundo de Freitas Melo and Almir da Costa Dantas, which can be accessed in full in Morais (2012) and Morais (2017), respectively. Besides these documents, we have used the records accessed in the personal collection of Professor Raimundo Melo and also in what is left of the collection of CECINE, which could be accessed at the Federal University of Pernambuco (UFPE) (these documents are available in Morais (2012; 2017).

Thus, following this text, we will know a little better what CECINE was, as well as a little of the historical context of its institution. Following, we will present the historical version of how this center provided training to mathematics teachers in the state of Rio Grande do Norte and several other Brazilian states, having a powerful impact on this process. Finally, we will identify some elements that can be highlighted about the performance of this center.

A first preamble: (re) understanding the CECINE

In the 1960s, the Brazilian context was experiencing a reality in which the number of teachers with some education to work in science

teaching was very low. "Data from 1965 show that the majority of high school teachers (60%) did not hold a university degree, others were normalists (20%), while about 20% improvised, without any kind of training" (ABRANTES, 2008, p. 177).

One of the ways found by the Ministry of Education and Culture (MEC), to try to improve teaching and scientific production in the country, was to create six centers to train teachers for the various regions of Brazil. With this, CECIs were created: Centro de Ensino de Ciências do Nordeste (CECINE, installed in Recife); Centro de Ensino de Ciências da Bahia (CECIBA, installed in Salvador); Centro de Ensino de Ciências de Guanabara (CECIGUA, installed in Rio de Janeiro); Centro de Ensino de Ciências de Minas Gerais (CECIMIG, installed in Belo Horizonte); Centro de Ensino de Ciências de São Paulo (CECISP, installed in São Paulo); and Centro de Ensino de Ciências do Rio Grande do Sul (CECIRS, installed in Porto Alegre).

The creation of these centers was directly linked to the intention of motivating the development of science that had already been set in motion throughout the country in the 1950s. In that decade, "science and the formation of qualified personnel became seen as fundamental elements for progress" (ABRANTES, 2008, p. 149 and 150), promoting, for example, the creation, in 1951, of the National Research Council (CNPq) and the National Campaign for the Improvement of Higher Level Personnel (CAPES) - as well as alerting to the urgent need for training teachers in the areas of experimental sciences (Sciences, Biology, Physics, Chemistry and Mathematics) to work in High School, which, at the time, included the gymnasium and high school. (SILVA, 2012).

CECINE was the first of six centers, to be created by MEC, in 1965, with "the objective of promoting the improvement of the qualification of teachers of basic education, especially the public network" (SILVA, 2012), in the eight states that, at the time, composed the Northeast region of the country (Pernambuco, Rio Grande do Norte,

Paraíba, Ceará, Maranhão, Piauí, Sergipe and Alagoas). After some time, the responsibility to form the teachers of the states of the North region (Pará, Amazonas, Amapá, Rondônia, Roraima and Acre) passed to CECINE. CECINE's area of action was clearly differentiated from that of the other CECIs, contrary to the very strong desire, in this period, to boost the development of the Northeast Region, which led to the creation of SUDENE, in 1959.

The SUDENE was created with the objective of leveraging the development of the Northeast region, much behind the rest of the country. SUDENE was then responsible for indicating "guidelines for a regional development policy, to which all federal investments in the Northeast should be subordinated, and to act as an agency for planning and coordinating federal investments in the region" (FERNANDES, 2011, p. 118). This body was directly linked to the Presidency of the Republic, also based in Recife[5].

As noted, the CECIs were established by the MEC, but this body was not the direct executor of the programs, which were in charge of regional agencies, and it was up to it to provide financial and technical resources to develop education and science.

The MEC apparently allowed the CECIs to produce science, without necessarily having a rigid structure. However, the objectives of these centers were "to provide permanent assistance to teachers of exact and natural sciences; to promote seminars, debates and conferences on topics related to improving the teaching of exact and natural sciences;" to promote "courses aimed at improving teachers' knowledge and improving teaching techniques; to stimulate science clubs and science fairs, to stimulate the formation of science teachers' associations;" to create and "maintain a specialized library; to promote contests aimed at rewarding teachers and students; to make agreements with official and

[5] More information about SUDENE and the relations of this superintendence with education in the Northeast Region, see Fernandes (2011).

private institutions in order to improve science teaching"; to offer training courses for "teachers in the techniques of improvisation of scientific material; to maintain a specialized film library for the loan of films to schools"; to investigate the "good application of scientific material loaned or donated to schools; to edit books and periodicals on science teaching"; as well as "to carry out surveys on science teaching in state schools" (MAURÍCIO, 1992, p. 45).

Another agency that came to work close to these centers was the Brazilian Institute of Education, Science and Culture (IBECC), almost directly linked to CECISP, which was in charge of translating books from the United States, and the centers were "responsible for disseminating them among teachers. It is worth noting that, with the exception of the creation of the film library, it was documented that all the attributions of CECIs were fulfilled by CECINE" (SILVA, 2012, p. 9). The American books in the area of Mathematics that IBECC translated were the School Mathematics Study Group, better known as SMSG.

Because it was experimental, created six months before the others, CECINE obtained funding from important agencies such as the Federal University of Pernambuco (UFPE), SUDENE, and Ford Foundation. "The latter made a contribution of US$ 150,000 for the period 1965/1968. SUDENE entered with "financial support to hire part of the team and scholarships for professors to spend nine months at CECINE's disposal. The university provided the space, the laboratories and part of the team," while the "Ministry of Education provided funds for scholarships and other expenses" (MAURITIUS, 1992, p. 18). Thus, having financial resources to function smoothly, CECINE began to offer courses to train teachers from the eight states of the Northeast[6] .

[6] These data can also be found in the UNESCO report of 1968, "National Center for Research and Development in Science Teaching". (UNESCO, 1968).

A History: Math Teacher Training and CECINE[7]

With the task of offering training to teachers in the areas of science, CECINE acted primarily by training teachers to act in the teaching of Mathematics, Physics, Chemistry, Biology and Sciences. Regarding the training offered to teachers in the area of Mathematics, the first record we can make is that the center of the Northeast offered a training for teachers in December 1965[8] , when the center forwarded to the Federal University of Rio Grande do Norte (UFRN) "information and registration form for the summer course of Mathematics that would take place in February 1966. This course would take place in Salvador, Bahia, and proposed to address topics of Modern Mathematics". However, there is no news of anyone from UFRN having participated in this course offered by CECINE, since at that time the Institute of Mathematics did not yet exist at the University, and the teachers of the "School of Engineering were much more concerned with carrying out in-depth studies in subjects related to applied mathematics" (BRITO; CRUZ; FERREIRA, 2006, p.96).

In addition to this intensive moment, CECINE offered another course, with longer duration, in 1967 and 1968, which trained at least two teachers from Rio Grande do Norte, one from Mossoró and the other from Natal, teachers Raimundo de Freitas Melo and Evaldo Rodrigues de Carvalho, respectively. Although the two professors took this course at CECINE, both agree on the disposition that only one representative from each area and from each state was chosen, according to their reports[9]. However, perhaps for this course, in the area of Mathematics, two teachers went through Rio Grande do Norte.

[7] This text brings numerous references to "Tomo Travessias", one of the volumes of our doctoral thesis (MORAIS, 2017), in which all documents referenced here can be accessed.
[8] See the CECINE document sent to UFRN about the intensive course (AX Registration in Tomo Travessias).
[9] The teachers' reports can be accessed in full in the works of Morais (2012) and Gutierre (2008).

Professor Raimundo remembers that there was a confusion in the selection, because when they were chosen, they questioned about their choice because they only had the high school, and they even complained to the courts. However, at the end of 1967, the Rockefeller Foundation, which financed the course, decided that he would go through the state. Professor Evaldo recalls that he learned about the course from a friend who worked at SUDENE, one of the agencies that financed CECINE's activities. The two teachers commented that the course had the objective of forming multiplying teachers, who, when returning to their states, should form other teachers from the material they had studied.

Professor Evaldo, when returning to Natal, still trained some teachers (GUTIERRE, 2008), but professor Raimundo did not: he returned and continued to teach, perhaps because of the amount of activities he took on, because, when he returned, he became director of Annex II of the Jerônimo Rosado Educational Center, where he also taught, and started teaching at União Caixeiral.

The course in which the teachers participated, as indicated, was financed by the Rockefeller Foundation, an American institution that aims, among other things, to collaborate with education in foreign countries, and also followed the perspectives of Modern Mathematics.

The creators of this approach, later known as the Modern Mathematical Movement (MMM), were concerned about the mismatch between higher education and secondary school, and intended to develop an alternative to unbinding mathematics based solely on memorizing processes. According to this proposal, mathematics would be taught in a logical way, revealing the reasoning behind the method, which would favor understanding.

This logical approach was already mobilized to teach geometry in secondary school. Thus, the main change was to take place in the disciplines of Arithmetic, Algebra and Trigonometry. MMM appeared

initially as a proposal for reforming secondary education, but soon it also returned to primary education, thinking that it was essential to do so, since at this level, students still did not have the common "vices" of memorization. This proposal impacted not only the teaching methods, but also the contents to be taught, when great importance was given to axiomatization, algebraic structures, logic and sets (VALENTE, 2008; COUSIN, 2011; SOUZA; GARNICA, 2012).

It is during this period that the first study and research groups are created in Brazil in the area of mathematics teaching, based on the ideas of Modern Mathematics, such as, for example, the Group for the Study of Mathematics Teaching (GEEM), coordinated by Professor Oswaldo Sangiorgi, in São Paulo[10] .

The training for teachers offered by GEEM, a great disseminator of ideas and ideals of Modern Mathematics, was divided into stages: in the first one we saw Theory of Sets and in the second and third, Linear Algebra. The GEEM was also responsible for the creation of other study groups, one of which in Santos/SP (named GEEM'(line)). Another example would be the *Núcleo do Estudo e Difusão do Ensino de Matemática* (NEDEM)[11], (Center for the Study and Dissemination of Mathematics Teaching) created in the state of Paraná in the 1960s, coordinated by Professor Osny Antonio Dacol, who "made a group of teachers aware of doing research on the Modern Teaching of Mathematics" (SEARA, 2005, p. 12). Other groups that collaborated in the dissemination of Modern Mathematics were the *Grupo de Estudos de Ensino de Matemática de Porto Alegre* (GEEMPA), (Porto Alegre Mathematics Teaching Study Group) created in Porto Alegre, and the *Grupo de Estudos e Pesquisas em Educação Matemática (GEPEM)*, Group of Studies and Research in Mathematics Education based in Rio de Janeiro.

[10] For more information about the GEEM group, see Baraldi (2003), Valente (2006) and Lima (2006).
[11] For more information on NEDEM, see Seara (2005).

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MMM was very strong in the South and Southeast regions of the country, and also had its reflexes in the Northeast, and in Rio Grande do Norte, specifically. In that state, SUDENE was one of the great responsible for the dissemination of the ideals of Modern Mathematics that "interfered in the training of mathematics teachers, in order to disseminate, on the one hand, the ideals of MMM related to the language of set theory and algebraic structure as support for all mathematics", and on the other hand, "the representation of mathematics as the necessary support for technological development, development that would enable the industrialization of society, which meets the ideals present in the foundation of SUDENE" (BRITO; GUTIERRE, 2007, p. 8).

Believing, therefore, that Modern Mathematics is the basis for the propulsion of science, this Superintendence invested in its dissemination throughout the Northeast region, having CECINE as one of the means for this, for being in line with its proposals.

In addition to the financing already mentioned, CECINE benefited in the 1970s from agreements between MEC and USAID[12] - the famous MEC/USAID agreements - in this case, aimed at financing the training of teachers in the Short Term Degree courses that were being created.

The Short Term Degree courses, which also received abundant resources from these agreements, differed from the Short Term Degree courses created in the late 1960s. The latter, due to the great need of people with training to work in teaching, had the objective of graduating in the short term a greater number of teachers to work in High School. However, neither the creation of this type of education nor the

[12] MEC's agreements with the U.S. agency USAID for the financing of teaching materials, courses, among other things in the country were criticized for legitimizing a modernizing transformation in the country, leading to the direction of its rationality. During the military regime, MEC agreements with USAID (which became known as MEC/USAID agreements), involving US$ 15 million, favored the education industry. These agreements became known mainly for the existence of several secret agreements that only became public in 1966, such as the agreement between them and the Technical Cooperation Council of the Alliance for Progress (CONTAP), the MEC-CONTAP-USAID, "which provided advisory services for the expansion and training of high school teachers in Brazil. As a result of these agreements, "the country's education system as a whole was modified, generating" the reforms of higher education in 1968 and of primary and secondary education in 1971. (ABRANTES, 2008, p. 191).

sufficiency exams, which had been in force since 1946, were still sufficient to meet the demand for constant growth in the country's gymnasium and high school schools. During the same period, the Federal Council of Education (CFE) authorized multipurpose gymnasiums, or work oriented gymnasiums, to operate with technical courses at the gymnasium level, and delegated the Expansion and Improvement Program for High Schools (PREMEM) with the task of building adequate spaces for these new schools between 1968 and 1972.

PREMEM, created by decree 63.914, of December 28, 1968, had as its objective "to encourage quantitative development, structural transformation and improvement of high school[13]", and would be maintained with public, federal and state resources, and internal and external extra-budgetary sources. In its creation regulation, it was foreseen, among other actions, that the program would be responsible for managing national projects aimed at training and improving all high school teachers, besides building a multipurpose model gymnasium in each Brazilian capital city, installing and maintaining training centers for science teachers, selecting scholarship holders to carry out improvements abroad, and organizing educational technical assistance services.

With these tasks, aiming mainly at working in multipurpose gyms, the most difficult and important responsibility PREMEM had was to put these institutions to work, which consequently meant finding a sufficient and adequate teaching staff to act in teaching, and it was worth remembering that specific training was necessary, since, In these new schools, the aim was to "reconcile the demands of basic general education with vocational initiation[14]," focused on work, emphasizing that it was not a professional gymnasium, but aimed to provide students with experiences

[13] The decree of creation of PREMEM was published in full in Documenta 96 of December 1968 and can be accessed in Tomo Travessias (CW Register).
[14] The project that creates the Short Duration Courses of PREMEM was published in full in Documenta 109 of December 1969 and can be accessed in Tomo Travessias (CX Register), besides it, we also bring the Course Plans of the Short Duration Courses, published in full in Documenta 113 of April 1970 (CY Register).

that developed attitudes and work skills to prepare young people for the context of the industrial society in which they lived.

It was in this context, then, that PREMEM approved, in 1969, the creation of an intermediate degree, the Short Duration Degrees, since the Short Duration Degrees did not meet the demand for teachers, mainly in science teaching, and the emergency courses for the sufficiency exam were not enough to train qualified personnel to work in multipurpose gyms. In the creation project, the program already outlined the intention to train, by 1972, 5,841 teachers in these Short Courses. In other words, it was another government attempt to train, on a large scale and in a short period of time, teachers to work in gymnasiums and high schools, but this time, with higher intermediate education, because even with the courses that were already being offered, there was still a great deficit of teachers with adequate training.

These new PREMEM courses intended to train teachers to work in science and mathematics teaching in record time. The course took place over a period of 204 days, or 34 weeks of work, to fulfill the 1,600 hour/class load, and it was planned to take 8 hours/classes daily, in the morning and afternoon, and if necessary, could extend until the evening. The students received a scholarship to maintain themselves and dedicate themselves fully to the course, in return they would have the commitment to return to their States to teach in the vocational gyms and act in any of the institutions indicated by the program, for a period of at least two years.

Each class of the Short Duration Degree would be formed by a maximum of thirty students, and the courses had a curriculum that, besides the subjects *Brazilian Studies and Portuguese Complements* (mandatory for all courses of higher education, at the time), was formed by 60% of subjects of specific content and 40% for didactic formation. As the coordination of the program suggested the creation of two courses to train teachers in the areas of science, one for teachers who would work

in the teaching of mathematics and another for those who would work in the teaching of experimental sciences, the program of the Short Duration Mathematics Degree would be composed of the following subjects: *Fundamentals of Elementary Mathematics, Geometry and Notions of Trigonometry and Algebra, Notions of Analytical Geometry and Initiation to Science and Physical and Biological Sciences, for the specific part, and Psychology of Education, Structure and Functioning of Secondary Education, Didactics and Teaching Practice* (which included the internship), for the pedagogical part.

Besides this course, PREMEN[15] also worked on the creation and operation of the first graduate course focused on science and mathematics, which ran from 1975 to 1984 under the coordination of Prof. Ubiratan D'Ambrosio, in partnership with the State University of Campinas (Unicamp/SP) and the Organization of American States (OAS). It is the Multinational Project for the Improvement of Mathematics and Science Teaching (PROMULMEC[16]). This project, which took place in the state of São Paulo, was also part of the set of strategies that met the MEC-USAID plans at the time. "With the support of PREMEN [...], the master's course had different characteristics from the traditional graduate programs of the time" and these differences "were justified by the increased demand for professionals in a context of transformation of both teaching guidelines and methodologies and the role of science in the world" (CURY, 2007, p.166).

With regard to multipurpose gyms, in the first stage of the PREMEM project, 272 of these gyms were built, distributed as follows: 51 in Bahia; 36 in Espírito Santo; 95 in Minas Gerais; 90 in Rio Grande do Sul and 1 model gymnasium in each of the other capitals. In the first four states, PREMEM signed an agreement with the Universities to carry out the Short Duration Degree.

[15] In 1972, by decree number 70,067, the Program for Expansion and Improvement of Education (PREMEN) was created, which absorbed and expanded PREMEM's proposal. Thus, we will refer to both.
[16] For more information about this Graduate course, see Cury (2011) and Silva (2007).

In the Northeast, it was in 1971 that "PREMEM signed an agreement with the Federal University of Pernambuco for the realization of a Degree in Science and Mathematics" (MELO, 1982, p. 17) to form 120 graduates, with the objective of providing the multipurpose gyms of the capitals of Pernambuco, Rio Grande do Norte, Sergipe, Alagoas, Paraíba, Ceará, Maranhão, Piauí, Amazonas, Pará, Mato Grosso, Goiás and Distrito Federal - it is worth remembering that the states of Goiás and Mato Grosso had not yet been divided.

At UFPE, CECINE was the organ responsible for these courses. This agreement between UFPE, CECINE and PREMEM (later PREMEN) was renewed until 1976, forming a total of 755 people[17]. From Rio Grande do Norte, 62 teachers graduated from the Short Duration Degree course of these programs, held by CECINE (MELO, 1982, p. 17); of these, 21 graduated in 1974, 04 in 1975 and 05 in 1976[18].

From the city of Mossoró, Professor Raimundo Melo, already mentioned, was one of the teachers trained in this course and remembers that it had a duration of one year and two months, with a workload of one thousand and two hundred hours of classes of mathematical contents, for the gymnasium and high school levels. The content was all of Modern Mathematics: sets, set properties, operations, functions, etc.

In Caicó, at Colégio Diocesano Seridoense, for example, at least two teachers had, as a teaching qualification, the Short-Term Degree course offered by CECINE and, of these, one taught mathematics[19]. Besides them, professor Almir da Costa Dantas[20] also participated.

The teacher remembers that, for being offered to the North and Northeast regions of the country, he studied with people from several other

[17] See the minutes of completion of the first edition of the course and the list of the five concluding classes of the Degree in Science and Mathematics in Tomo Travessias (CM, CN, CO Registers).
[18] The documents that list the graduates of these courses do not include the division of those graduated by states in 1972 and 1973.
[19] See the CDS Teachers' Demonstrative Charts (X, Y and Z Records in Tomo Travessias).
[20] Professor Almir's narrative can be accessed in full in Morais (2017).

states, but also got in touch with other students from different cities of Rio Grande do Norte, such as Caicó, Mossoró, Santa Cruz, Natal and Patu. It was a course given simultaneously to all these places, whose classrooms were organized in alphabetical order, each having between 45 and 50 students and, in general, about four hundred people enrolled.

The teacher remembers that the selection took place by state, like a vestibular, and the number of places was limited. The selection process was open to anyone who wanted to participate, and it was not necessary to act as a teacher, and each one of those approved and summoned won a scholarship to take the course in Recife. At the Federal University of Pernambuco (UFPE), where the course was held, the students had the same benefits as the university students, and the professors were also from UFPE. The course load was 1,650 hours and the course was run by credit system and subjects; intensive, with classes in the morning and afternoon shifts, and the students had practically no vacations: once one subject was finished, another was started. They had only an eight or fifteen-day recess period and, after that, Almir recalls that many students did not return to continue their training.

This course was given between August 1974 and December 1975, and Almir tells that he was not in the first class of this course. He remembers that he did not try to enter before because he had not yet finished the scientific course. Each stage of the course only started after the end of the previous one and worked that way because there was no space to attend more than one edition simultaneously, according to Almir, remembering also that there was no extension of the course time: the students had to finish in the year and a half of the course.

Almir tells that the structure of the course was excellent, with the practical classes in laboratories, of which he says the best was the one of sciences, in which they really developed research. The teacher remembers that the subjects of this course were similar to those of PIPEM, subjects focused on teaching, and sought to prepare the teacher

to teach at the level of gymnasium and science. Several of these subjects were taken advantage of when Almir returned to Natal, such as Fundamentals of Mathematics, Teaching Psychology, Study of Brazilian Problems (EPB) and Teaching Practice. In Teaching Practice, at the end of the course, the students had to intern in schools; Almir taught classes in a school that was located on Boa Viagem beach.

For all these reasons, CECINE represented for Rio Grande do Norte, between the 1960's and 1980's, an important locus of formation. Because of its scope of action - North and Northeast - it is worth pointing out that its relevance does not stop there. Other works such as those of Macena (2013), Fernandes (2011) and Finato, Baraldi and Morais (2012) bring evidence of how this center worked in teacher training in the states of Paraíba and Maranhão, or Both (2014), which presents evidence of the work of this center in the training of teachers in Mato Grosso, i.e., the Midwest region.

Some general notes

As we can see from the above, CECINE, despite being little known when dealing with the history of teacher training in Brazil, has occupied central spaces in this process, especially with regard to the training of teachers who worked/would work in teaching natural sciences and mathematics.

Specifically, the center has offered training in the teaching of Mathematics since its foundation year, 1965, based on the precepts of Modern Mathematics, so strongly spread at the time by public policies and by groups of studies and research on the teaching of mathematics that were beginning to emerge.

In the 1970's, CECINE will act more strongly in the formation of teachers in the Short Term Science Degree course (which differs from the

widely known Short Term Degree in the History of Brazilian Education), from a partnership with PREMEM (later PREMEN).

It is worth noting that, with this article, we do not have the pretension of completeness on the subject. On the contrary, we seek to shed light on a theme still little explored by the Brazilian History of Education (Mathematics), which is the impact of CECIs, in particular CECINE, in the training and performance of mathematics teachers.

Referências

ABRANTES, A. C. S. *Ciência, Educação e Sociedade:* o Caso do Instituto Brasileiro de Educação, Ciência e Cultura (Ibecc) e da Fundação Brasileira de Ensino de Ciências (Funbecc). Tese de doutorado do Curso de Pós-graduação em história das Ciências e da Saúde da Casa de Oswaldo Cruz/Fiocruz. Rio de Janeiro. 2008.

BARALDI, I. M. *Retraços da Educação Matemática na Região de Bauru (SP):* uma história em construção. 2003. 241 f. Tese (Doutorado em Educação Matemática) – Instituto de Geociências e Ciências Exatas, Universidade Estadual Paulista, Rio Claro (SP), 2003.

BARALDI, I. M.; GAERTNER, R. *Textos e contextos:* um esboço da CADES na história da educação (matemática). Blumenau: Edifurb, 2013.

BOTH, B. C. *Sobre a formação de professores de matemática em Cuiabá - MT (1960-1980).* 2014. 402 p. Dissertação (Mestrado em Educação Matemática) – Instituto de Geociências e Ciências Exatas, Universidade Estadual Paulista, Rio Claro (SP), 2014.

BRITO, A. J.; CRUZ, S.S. L.; FERREIRA, J. P. C. A inserção do Movimento da Matemática Moderna na UFRN. *Diálogo Educacional.* PUCPR. V. 6. (18). p. 91 a 100. maio/agosto. 2006. DOI: https://doi.org/10.7213/rde.v6i18.3310.

BRITO, A. J.; GUTIERRE, L. S. A formação de professores que ensinavam matemática no Rio Grande do Norte entre 1960 e 1970: o convênio SUDENE/USAID. In: Encontro Nacional de Educação Matemática, 9., 2007, Belo Horizonte. *Anais...*, Belo Horizonte: [s.n.], 2007.

COUSIN, A. O. A. O Movimento da Matemática Moderna nos Boletins da Sociedade Paranaense de Matemática. *Revista Diálogo Educacional* (PUCPR. Impresso) , v. 11, p. 751-768, 2011. DOI: https://doi.org/10.7213/rde.v11i34.4489.

CURY, F. G. *Uma História da Formação de Professores de Matemática e das Instituições Formadoras do Estado do Tocantins.* Rio Claro, 2011. 289f. Tese (Doutorado em Educação Matemática) – Instituto de Geociências e Ciências Exatas, Universidade Estadual Paulista, Rio Claro (SP), 2011.

CURY, F. G. *Uma narrativa sobre a formação de professores de Matemática em Goiás*. Rio Claro, 2007. 201f. Dissertação (Mestrado em Educação Matemática) – Instituto de Geociências e Ciências Exatas, Universidade Estadual Paulista, Rio Claro (SP), 2007.

FERNANDES, D. N. *Sobre a formação do professor de Matemática no Maranhão:* cartas para uma cartografia possível. Rio Claro, 2011. 388f. Tese (Doutorado em Educação Matemática) – Instituto de Geociências e Ciências Exatas, Universidade Estadual Paulista, Rio Claro (SP), 2011.

FINATO, J. A. R.; BARALDI, I. M.; MORAIS, M. B. CADES: um ensaio sobre uma formação de professores de Matemática. *Perspectivas da Educação Matemática*, v. 5, p. 88-100, 2012.

GARNICA, A. V. M. (Org.). *Cartografias Contemporâneas*: Mapeando a Formação de Professores de Matemática no Brasil. 1ed.Curitiba: Appris, 2014.

GARNICA, A. V. M.; FERNANDES, D. N.; SILVA, H. Entre a amnésia e a vontade de nada esquecer: notas sobre regime de historicidade e história oral. *Bolema* (Rio Claro), v. 25, nº 41, p. 213-250, 2011.

GARNICA, A. V. M. (Org.). *Oral History and Mathematics Education*. 1ed. Cham (Alemanha): Springer, 2019.

GUTIERRE, L. S. *O ensino da Matemática no Rio Grande do Norte (1950-1980):* trajetória de uma modernização. 2008. 150 f. Tese (Doutorado) - UFRN, Natal, 2008.

LIMA, F. R. *Grupo de Estudo do Ensino de Matemática – GEEM:* Formação de Professores e o Movimento da Matemática Moderna no Brasil. Dissertação (Mestrado em Educação Matemática). Ponfitifícia Universidade Católica de São Paulo, São Paulo, 2006.

MACENA, M. M. M. *Sobre formação e prática de professores de Matemática:* estudo a partir de relatos de professores, década de 1960, João Pessoa (PB). Tese (Doutorado em Educação Matemática) – Instituto de Geociências e Ciências Exatas, Universidade Estadual Paulista, Rio Claro (SP), 2013.

MAURÍCIO, L. A. *Centro de Ciências:* origens e desenvolvimento – uma relação sobre seu papel e possibilidades dentro do contexto educacional. Dissertação de mestrado em Educação no Instituto de Física/Faculdade de Educação USP, São Paulo. 1992.

MELO, P. B. *Minhas memórias da Faculdade de Ciências Econômicas de Mossoró.* Mossoró: ESAM/FGD, 1982.

MIRANDA, B. C. B. *A CADES e um novo modelo de professor secundário nas décadas de 1950 e 1960.* 2019. Tese (Doutorado em Educação Matemática) – Instituto de Geociências e Ciências Exatas, Universidade Estadual Paulista, Rio Claro (SP), 2019.

MORAIS, M. B. *Peças de uma história:* formação de professores de matemática na região de Mossoró/RN. Dissertação (Mestrado em Educação Matemática) - Instituto de Geociências e Ciências Exatas, UNESP, Rio Claro, 2012.

MORAIS, M. B. *Se um viajante... Percursos e Histórias sobre a formação de professores de matemática no Rio Grande do Norte.* Tese (Doutorado em Educação Matemática) - Instituto de Geociências e Ciências Exatas, UNESP, Rio Claro, 2017.

SEARA, H. F. *Núcleo de Estudo e Difusão do Ensino da Matemática – NEDEM – "Não é Difícil Ensinar Matemática".* 2005. 228 f. Dissertação (Mestrado) – Setor de Educação, Universidade Federal do Paraná, Curitiba, 2005.

SILVA, B. C. *Breve história do CECINE:* como a ciência virou dúvida e investigação. 2012 (mímeo)

SILVA, H. *Centro de Educação Matemática (CEM):* fragmentos de identidade. Rio Claro, 2006. 480f. Tese (Doutorado em Educação Matemática) – Instituto de Geociências e Ciências Exatas, Universidade Estadual Paulista, Rio Claro (SP), 2007.

SOUZA, L. A.; GARNICA, A. V. M. Movimentos de um Movimento: um estudo sobre os significados atribuídos ao escolanovismo e seus ritmos. *Educação Matemática Pesquisa* (Online), v. 14, p. 481-506, 2012.

UNESCO. *Brazil - National Centre for Research and Development in Science Teaching*. Paris, August 1968.

VALENTE, W. R. A Matemática Moderna nas Escolas do Brasil: Um Tema Para Estudos Históricos Comparativos. *Revista Diálogo Educacional*, v. 6, n. 18, p. 19-34, 2006. DOI: https://doi.org/10.7213/rde.v6i18.3214.

VALENTE, W. R. Osvaldo Sangiorgi e o Movimento da Matemática Moderna no Brasil. *Revista Diálogo Educacional*, v. 8, n. 25, p. 583-613, set./dez. 2008. DOI: https://doi.org/10.7213/rde.v8i25.3724.

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