OTHER THEMES

Countryside Education at the National Conference of Mathematics Education (2013-2019)

Diandra Batirola Ledur[I]
Juliana Gabriele Kiefer[II]
Rita de Cássia Pistóia Mariani[I]

[I]Universidade Federal de Santa Maria (UFSM), Santa Maria/RS – Brazil
[II]Universidade Franciscana (UFN), Santa Maria/RS – Brazil

ABSTRACT – Countryside Education at the National Conference of Mathematics Education (2013-2019)[1]**.** This article aims to map publications that take Countryside Education as their object on the records of three editions of the National Conference of Mathematics Education (ENEM, initials in Portuguese from Brazil). Through a qualitative bibliographical research that considers content analysis procedures, it could be verified: increase in the number of productions on Countryside Education despite the reduction in the total number of publications throughout the three editions; predominance of experiments that reveal processes of education and learning (34.69%), followed by teacher education (28.57%), theoretical aspects (24.49%) and mathematical skills of countryside people (12.25%); focus on content/concepts of school mathematics only in 2019, considering everyday life at school, mainly, in financial situations.
Keywords: **Mapping. Content Analysis. Financial Situations.**

RESUMO – Educação do Campo no Encontro Nacional de Educação Matemática (2013-2019). Este artigo objetiva mapear publicações que tomam como objeto a Educação do Campo nos anais de três edições do Encontro Nacional de Educação Matemática (ENEM). Por meio de uma pesquisa bibliográfica qualitativa que considera procedimentos da análise de conteúdo, constata-se: aumento do número de produções sobre a Educação do Campo apesar da redução no total de publicações ao longo das três edições; predominância de experiências que revelam processos de ensino e aprendizagem (34,69%), seguida de formação de professores (28,57%), aspectos teóricos (24,49%) e conhecimentos matemáticos de camponeses (12,25%); enfoque em conteúdos/conceitos da matemática escolar apenas em 2019, considerando o cotidiano, principalmente, em situações financeiras.
Palavras-chave: **Mapeamento. Análise de Conteúdo. Situações Financeiras.**

Introduction

The emergence of Mathematics Education as a professional and scientific field is due to at least three facts: the concern of mathematicians themselves and mathematics teachers about the quality of dissemination/socialization of mathematical ideas to new generations, that is, the improvement of their classes, updating and modernization of the Mathematics school curriculum; the initiation of teacher formation courses at secondary level, proposed by European institutions, at the end of the 19th century, thus contributing to constitute the first university specialists in mathematics teaching; finally, experimental research on learning processes, carried out with children, since the beginning of the 20th century, by American and European psychologists (Kilpatrick, 1992).

In 1958, the North American Mathematical Society directed studies towards the development of a new school curriculum, which led to the emergence of research groups involving mathematicians, educators and psychologists. From this, the first master's/doctoral programs in Mathematics Education were also implemented, mainly in the United States (Fiorentini; Lorenzato, 2006).

In 1959, in France, the International Conference is held by the Organization for European Economic Cooperation. Faced with the concern with a better technical-scientific qualification, specialists from twenty countries discussed proposals for changing the teaching of mathematics in high school, establishing the foundations of the Modern Mathematics Movement (MMM) (Miorim, 1998).

Thus, internationally, in the 1950s and 1960s, studies in Mathematics Teaching increased significantly, as a result of the MMM. The MMM emerged as a result of the Cold War, as well as the gap between scientific-technological progress and the school curriculum, observed after the end of the 2nd World War (Fiorentini; Lorenzato, 2006). But since "[…] it did not produce the intended results, the movement served to demystify much of what was done in mathematics teaching and to change – undoubtedly for the better – the style of classes and tests and to introduce many new things, […]" (D'ambrosio, 1996, p. 53).

With regard to the Brazilian context, Miguel et al. (2004) reiterate that the MMM made an important contribution to teaching and research in Mathematics, especially in the 1960s, as textbooks and continuing education courses for teachers were published at that time. The situation was increasingly favorable for a new area of discussion to be formed (Martins; Santos, 2016). Thus, from the mid-1970s onwards, the first signs of the constitution of another perspective on Mathematics Teaching occurred in Brazil, with the relevance attributed to the sociocultural point of view in the teaching and learning process (Martins; Santos, 2016).

Fiorentini and Lorenzato (2006) point out that the "birth" phase of Mathematics Education in Brazil goes from the beginning of the 1970s to the first years of the 1980s. It is from this period that the production pro-

cess in Teaching and/or Mathematics Education in national journals, as well as research projects, begins. According to Miguel et al. (2004), if the recognition of the area of Mathematics Education would come, on the one hand, from the dissemination of research, on the other hand, they were restricted to works for the purpose of titling and to two journals, namely: Bolema and Zétetikè[2].

Another milestone in Brazilian history was the founding of the Brazilian Society of Mathematics Education (SBEM- initials in Portuguese from Brazil) in 1988, during the II National Conference of Mathematics Education (ENEM - initials in Portuguese from Brazil) in Maringá/PR, and the first graduate programs. According to Búrigo (2019), with the multiplicity and appreciation of collective instances of debate implemented with the support of SBEM, a progressive institutionalization of educational policies could be observed.

> In the early years of SBEM, these debates revolved around themes perceived as relevant in the daily practices of mathematics educators – such as the dispute over resources for research, and the recognition of Mathematics Education by development agencies. Over time, they progressively widened, towards themes related to curricula, teacher education, reaching even the more general theme of financing or the general purposes of school education (Búrigo, 2019, p. 21).

In this sense, discussions promoted in the SBEM working groups (GT) also stand out[3], two of them have, in their program content, aspects related to Countryside Education, namely: GT2 – Mathematics Education, in the final years of Elementary and High School, focuses on "[...] Youth and Adult Education, High School integrated with professional education, *Countryside Education*, Indigenous School Education, Quilombola School and the Education of Ethnic-Racial Relations" (Sbem, 2022, emphasis added); as well as GT3 – Curriculum and Mathematics Education, in which research is carried out on roles and effects in different teaching modalities, including *Countryside Education* and also in different stages of schooling (Sbem, 2022).

In this context, this article aims to map publications that take Countryside Education as their object in the records of three editions of the National Conference of Mathematics Education, through a qualitative bibliographical research of the mapping type that considers content analysis procedures.

Mathematics Education and Countryside Education

According to Leite (2018, p. 46), one of the first works in which approximations between Mathematics Education and Countryside Education in Brazil are found dates back to 2003. In this production, ethnomathematics was taken as an alternative for teaching mathematics in a school in a settlement of the Movimento Sem Terra of Itapuí, located in the city of Nova Santa Rita/RS. Among the results, Knijnik (2003) in-

dicates that the "[...] perspective of Mathematics Education can be allied in the construction of a new formative context, better and more coherent with the proposal of Countryside Education". However, after this production, few theoretical-practical dialogues were systematized between these two aspects.

One of the hypotheses for this fact may be based on the need to, firstly, base Countryside Education within the scope of Mathematics Education, to later consider it in specific studies. The other refers to the historical moment in relation to the claims and struggles of social movements and rural subjects (Caldart et al., 2012), as well as public policies within the scope of Countryside Education. This is because, as of 2002, the Operational Guidelines for Basic Education in Countryside Schools were instituted, which established the guarantee and right to education for peasants (Brasil, 2002).

Countryside Education emerged from the claims of social movements and rural subjects who had objectives and interests aimed at:

> [...] issues of work, culture, knowledge and social struggles of peasants and the (class) clash between field projects and between logics of agriculture that have implications for the project of country and society and in the conceptions of public policy, education and human formation (Caldart et al., 2012, p. 259).

It should also be noted that, among the legal frameworks in the scope of Countryside Education, Resolution No. 2, of 2008, is also evident, which establishes complementary guidelines, norms and principles for the development of public policies to assist Countryside Basic Education (Brasil, 2008), as well as Decree No. 7,352 of 2010, which provides for the National Countryside Education Policy and the National Education Program for Agrarian Reform (Pronera) (Brasil, 2010).

A decade after the work of Knijnik (2003), Barbosa, Carvalho and Elias (2013) present an initial framework that approaches studies of Mathematics Education with Coutryside Education, as an object of study, for that, they analyze the ENEM records in the period from 1987 to 2010, totaling 10 events. Among the results of this mapping, they found that the "[...] specific production on this topic is low (approximately 0.3% of the total) and, in most of the works, the authors value the connection between the peasant reality of the students and the school routine" (Barbosa; Carvalho; Elias, 2013, p. 1).

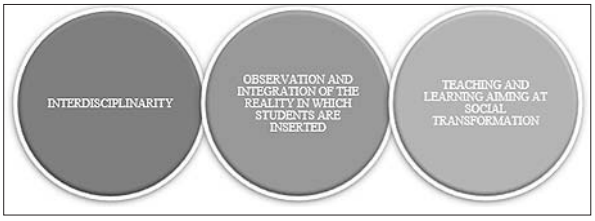
In that same year, Lima and Lima (2013) published a study with the aim of reflecting on evidence of interlocutions between Mathematics Education and Countryside Education, presenting three challenges: the non-politicization of Education projects and Mathematics classes in rural schools ; the difficulty of implementing an emancipatory education in an educational system based on universalist foundations; the formation of Mathematics teachers, which generally disregards political and social elements both in the training processes and in their teaching.

Among the results, Lima and Lima (2013, p. 1) consider that teaching mathematics should contribute to social transformations, which means taking the "[...] History of Education and the struggles of peasant peoples, their place of belonging and productive cycles, among other defining elements of this school". Therefore, mathematics stands as a space that aims to dialogue with the knowledge of peasants.

In this sense, Mathematics Education is relevant in the context of Countryside Education, as it can "[...] promote the emancipation of people with social transformation, a critical posture in their worldview, through formal and non-formal educational processes, which are offered to students in schools and in their communities, associations, settlements, etc." (Cavalcante, 2015, s. p.).

Therefore, it is essential to consider interdisciplinary aspects, as mathematics establishes a relationship with the social dimensions of the subjects in the field. In addition, Leite (2018) highlights two other points (Figure 1):

Figure 1 – Points of approximation between Countryside Education and Mathematics Education



Source: Elaborated by the authors based on Leite (2018).

According to Leite (2018), the first point makes Countryside Education, articulated with Mathematics Education, allow observing different dimensions in the construction of content; the second point understands that in teaching and learning processes, experiences and specificities of peasant life must be appreciated, and students' motivation is greater when the content is related to their reality and their experiences; the third point considers that Countryside Education is born from social movements that struggle for class equality, and, when discussing Mathematics Education in this space, different dimensions such as social, political and economic must be considered, which are essential and play a role in raising political awareness.

Methodological Aspects

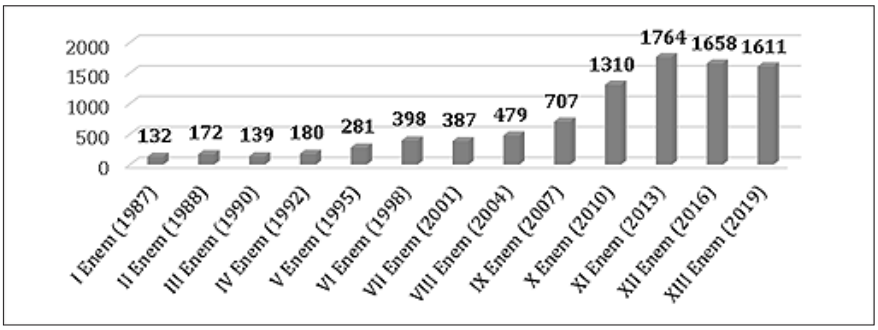
This study follows a qualitative approach of the mapping type in seeking to "[...] recognize the most diverse factors that manifest themselves on the researched entities; understand a fact, an issue within a scenario; make use of the knowledge produced and reorganize some sectors of this knowledge" (Biembengut, 2008, p. 135). In this way, it details what has already been published on Countryside Education in the

XI ENEM in 2013, XII ENEM in 2016, XIII ENEM in 2019, showing "[...] how many, who and where have already done something about it, what advances have been achieved and what problems are open to be taken forward" (Biembengut, 2008, p. 73).

To compose the time frame, which includes the last three ENEM editions, Barbosa, Carvalho and Elias (2013; 2014)[4], – who analyzed ENEM records between 1987 and 2010 – are considered as a lower limit, and the year of the last edition as an upper limit of ENEM, in 2019. It was decided to continue the aforementioned study, considering that ENEM is the event in the area of Mathematics Education that has the participation of several professional and scientific segments: researchers, teachers of Basic Education and Higher Education, as well as undergraduate students in Mathematics, Pedagogia and other related courses, as well as graduate students *lato sensu* and *stricto sensu* from different regions of the country (Enem, 2013).

In addition, it is a relevant meeting for the area of Mathematics Education in the country, as it brings together the largest audience and, consequently, a significant number of productions. In terms of variation in the number of works published in the ENEM records (Graph 1), it is observed that the last four editions were the most expressive, with an apex in the XI ENEM, computing more than ten times the total number of works when compared to the I ENEM. This fact corroborates the pertinence and scope of the event for the community of mathematics educators in Brazil.

Graph 1 – Quantitative of works published in Enem records



Source: Elaborated by the authors based on Barbosa, Carvalho and Elias (2013; 2014) and Monteiro (2018; 2020).

Finally, it is worth mentioning that the period selected in this study covers the years of the two editions of the *Programa Nacional do Livro Didático do Campo* (PNLD Campo, in Portuguese, from Brazil), that is, 2013 and 2016. This program distributed, to schools in the countryside, textbooks intended for the early years of elementary school. Each edition contained two collections, which included, among other curricular components, Mathematical Literacy (1st to 3rd year) and Mathematics (4th to 5th year).

In order to compose the qualitative analyzes that point out trends and research demands that deal with Countryside Education in ENEM, content analysis precepts are used that aim to obtain "[...] (quantitative or not) that allow the inference of knowledge related to the conditions of production/reception (inferred variables) of these messages" (Bardin, 2016, p. 48). This method consists of:

i) pre-analysis, which consists of organizing the research and defining the corpus;

ii) exploration of the material, which is the definition of categories (coding) and identification of recording units (meaning unit);

iii) treatment of results and interpretations, which condenses and highlights the information for a more elaborate, reflective and critical analysis of the data, including charts and graphs (Bardin, 2016).

Pre-analysis

Through a first floating reading of the records of the three events, it was identified that there were works that dealt with Countryside Education, but that did not contain the search terms/filters/entries listed in the mapping of Barbosa, Carvalho and Elias (2013 ; 2014), that is, "countryside education", "rural education", "education in the field", "field school", "rural school", "popular education", "active school", "itinerant school", "settlement", "encampment", "agriculture", "landless", "MST", "agrarian reform" and also adjectives such as "agricultural", "peasant" and "rural".

For this reason, possible new terms were listed, and, subsequently, the pertinence of each one was analyzed in line with the provisions from the *Dicionário da Educação do Campo* (Countryside Education Dictionary) (Caldart et al., 2012). Thus, three more entries were included: "field", "land" and "peasant", totaling 20 filters.

The identification of the entries in the 5033 works initially occurred by analyzing the title of the productions and then the full text. In the ENEM records for the years 2013 and 2016 (ENEM, 2013; 2016), such terms were typed, one by one, in the repositories of the web page, using the browser's locator tool. In relation to the 2019 records (ENEM, 2019), the search space available on the website was used. In this sense, it corroborates with Mendes and Pereira (2021) who show that searches in event records can be optimized when they are stored on web pages, but depend a lot on how the articles are made available.

With this procedure, 49 works were obtained: 3 publications in the XI ENEM, held in Curitiba/PR (2013); 17 in the XII ENEM in São Paulo/SP (2016) and 29 in the XIII ENEM in Cuiabá/MT (2019). This growth trend in the number of publications that focus on Countryside Education in ENEM is not reflected in the total number of productions in the respective three editions, as a successive decrease can be seen, as shown in Graph 1.

Among the authors with the highest number of productions, Línlya Sachs (attached to the PPG Teaching of Mathematics - Universidade Tecnológica Federal do Paraná) and Iranete Maria da Silva Lima (acting at the PPG Mathematics and Technological Education - Universidade Federal de Pernambuco) stand out.

Based on the theme "Retrospectives and perspectives of Mathematics Education in Brazil", the XI ENEM thus sought to represent desires of, at the same time, critically visiting the past and envisioning a future with proposals for a better Mathematics Education in our country. For that, four axes were organized – School Practices, Teacher Training, Research in Mathematics Education and History of Mathematics Education – systematized in four sections: scientific communication, poster, experience report and round table discussion.

Table 1 presents, in the first column, the production code (P), in the second the author(s) and the title of the 2013 edition, highlighting the identification entries.

Table 1 – *Corpus* of analysis (XI Enem-2013)

P	Author(s)/ Title of work
1	BARBOSA, L. N. S. C de; CARVALHO, D. F.; ELIAS, H. R. *Educação do Campo* nas 10 edições do Encontro Nacional de Educação Matemática: uma retrospectiva (*Countryside Education in the 10 editions of the National Conference of Mathematics Education: a retrospective*)
2	LIMA. A. S. de; LIMA, I. M. da S. Educação Matemática em diálogo com a *Educação do Campo* *(Mathematics Education in dialogue with Countryside Education)*
3	SILVA, C. B. da; KICHOW, I. V. A transição da *escola rural* para a escola urbana e seus reflexos no ensino de matemática: um caso na cidade de Laguna Carapã (*The transition from rural school to urban school and its effects on mathematics teaching: a case in the city of Laguna Carapã*)

Source: Elaborated by the authors.

Among the three selected studies, the entry "countryside education" predominates, with one published in the scientific communication section (P1) and the others in the poster section (P2 and P3). P1 and P2 seek a theoretical deepening with articulations between Mathematics Education and Countryside Education through a historical retrospective, considering the ENEM records, and a dialogue whose objective is to understand the phenomena intrinsic to the teaching of mathematics in rural schools, respectively. P3, on the other hand, analyzes and reflects on obstacles revealed by students from rural schools, in a context of transition, as well as expectations evidenced by teachers who work in such a school context.

The XII ENEM (Table 2) had as its theme *Mathematics Education in Contemporaneity: challenges and possibilities*, putting into discussion subjects and theoretical-methodological trends that pervade Mathematics Education, whether as a professional field or as a scientific field. In this event, publications were grouped into scientific communication, experience report, poster, short course and round table discussion.

Among the 17 productions identified, 13 were allocated in the scientific communication section (P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15 and P16), three in the round table discussion section (P17, P18 and P19) and one in the experience report section (P20).

Table 2 – *Corpus* of analysis (XII Enem-2016)

P	Author(s)/ Title of work
4	NETO, V. F. Educação Matemática Crítica e *Educação do Campo*: reflexões (*Critical Mathematics Education and Countryside Education: reflections*)
5	DINIZ, D. C; BARROS, A. H. C. A Licenciatura em *Educação do Campo* na Formação de Professores em Ciências da Natureza e Matemática no Maranhão (*Degree in Countryside Education in the Training of Teachers in Natural Sciences and Mathematics in Maranhão*)
6	SILVA, J. P. da; LIMA, I. M. da S. A natureza falibilista da Matemática, a Educação Matemática Crítica e a *Educação do Campo*: uma aproximação (*The fallibilist nature of Mathematics, Critical Mathematics Education and Countryside Education: an approach*)
7	LIMA, A. S. de; LIMA, I. M. da S. As Formações Matemáticas, Pedagógicas e Sociopolíticas de professores em Cursos de Licenciatura em *Educação do Campo* *(The Mathematical, Pedagogical and Sociopolitical Formation of Teachers in Degree Courses in Countryside Education)*
8	SACH, L. Desafios para a *Educação do Campo* no Estado de São Paulo (*Challenges for Countryside Education in the State of São Paulo)*
9	FERNANDES, F. L. P. Práticas profissionais do campo e a matemática: um olhar para a perspectiva pedagógica da etnomatemática na Licenciatura em *Educação do Campo* *(Professional practices in the countryside and mathematics: a look at the pedagogical perspective of ethnomathematics in the Degree in Countryside Education)*
10	SANTOS, J. G. de C.; SACHS, L. Relações entre movimentos sociais e cursos de licenciatura em *Educação do Campo* com habilitação em matemática do Paraná (*Relations between social movements and degree courses in Countryside Education with specialization in mathematics in Paraná)*
11	SAKAI, E. da C. T.; NOGUEIRA, K. F. P.; ANDRADE, S. V. de. Percursos da *educação do campo*: um olhar para as aulas de investigações matemáticas (*Countryside education pathways: a look at mathematical investigation classes)*
12	SILVA, F. de J. F. da. Práticas socioculturais, problematizações e matematizações em um *assentamento* rural (*Sociocultural practices, problematizations and mathematizations in a rural settlement)*
13	PIRES, E. T.; MORAIS, T. da S.; GONÇALVES, K. L. N. Educação Matemática do *Campo*: práticas socioculturais em contexto ribeirinho marajoara (*Countryside Mathematics Education: sociocultural practices in a Marajoara riverside context)*
14	GONÇALVES, K. L. N. Formação de educadores matemáticos do *campo*: desvios sinuosos (*Formation of mathematics educators in the countryside: winding detours)*

15	SOUZA, R. B. Programa etnomatemática: análise de práticas pedagógicas de ensino de matemática no contexto de Educação no/do *Campo* *(Ethnomathematics program: analysis of pedagogical practices of teaching mathematics in the context of Education in/of the Field)*
16	SÁ, J. R.; FONSECA, M. da C. F. R. "Aí a gente fica numa sinuca": desafios da formação e da atuação docente na Educação (Matemática) do *Campo* *("Then we are in a snooker": challenges of training and teaching performance in Education (Mathematics) in the Countryside)*
17	ROSEIRA, N. A. F. O ensino de matemática na *Educação do Campo*: sobre os potenciais de formação em valores e para a cidadania (*Mathematics teaching in Countryside Education: on the potential for training in values and citizenship*)
18	MONTEIRO, C. E. F. Recursos no ensino e aprendizagem de matemática em contextos de *Educação do Campo* *(Resources in the teaching and learning of mathematics in Countryside Education context)*
19	LIMA, I. M. da S. A alternância pedagógica como metodologia de ensino de matemática em *escolas do campo* *(Pedagogical alternation as a methodology for teaching mathematics in rural schools)*
20	NASCIMENTO, G. P. Olimpíadas da matemática numa *escola rural*: uma aliança que deu certo (*Mathematics Olympics in a rural school: an alliance that worked*)

Source: Elaborated by the authors.

The entry "education in the countryside" continues to be more frequent, stated in the title of 11 studies with the variation "education in/from the countryside" (P4, P5, P6, P7, P8, P9, P10, P11, P15, P17, P18). However, it is noteworthy that it is the first edition of ENEM in which some literal interconnections between Mathematics Education and Countryside Education are observed, through the composition of terms such as "mathematics education in the countryside" (P13), "education (mathematics) from the countryside" (P16) and "mathematics educators from the countryside" (P14).

In addition to the entry "rural school", already observed in the 2013 edition, "rural settlement", "field math educators" and "country schools" are also identified, which may indicate that in this edition of ENEM there was an expansion of studies with a view to considering the context related to Countryside Education. For this reason, works emerge that show teaching and learning processes in the school environment, highlighting didactic resources, didactic-pedagogical aspects, as well as incipient theoretical-methodological trends.

In this edition, it is possible to see the beginning of mentions of training processes, in particular, initial training within the scope of degree courses, revealing the first publications with themes focused on the training of teachers who work in Countryside Education. This result may be related to the fact that "[…] the courses began to form the first classes with qualifications in Mathematics precisely in 2016" (Lima; Lima, 2017, p. 60).

The edition of the XIII ENEM was held in 2019 at Arena Pantanal with the theme "Mathematics Education with Basic Education Schools: interfaces between research and classrooms". The event records are distributed in 25 sub-axes in the lectures, round table discussions and awarded works sections.

From the selection, 29 productions were identified (Chart 3). Again, the most recurrent entry was "countryside education" (P41, P42, P44, P45, P46, P47, P48), but, unlike previous editions, in a smaller proportionate amount and without variation, as in the ENEM edition of 2016.

In addition, among the results, there is a significant increase in studies carried out in the classroom, as the following entries are identified in a significant number of searches: "countryside school" (P37, P38, P40, P43, P49), "rural school(s)" (P25, P26, P29, P31, P35, P39), "agricultural family school" (P34, P36) , as well as in relation to the agricultural context: "rural communities" (P21), "domestic and rural economy" (P23), "field" (P28, P30), "family farming" (P33), "agricultural(s)" (P27, P32), "land" (P24) and "peasant students" (P22).

Table 3 – *Corpus* of analysis (XIII Enem-2019)

P	Author(s)/ Title of work
21	SOUZA, D. R. de; VICTER, E. das F. Etnomatemática das comunidades *rurais* e o ensino da matemática escolar (*Ethnomathematics of rural communities and the teaching of school mathematics)*
22	MENEZES, D. N. de; MANOEL, C. A. L. C. Uma análise das entrevistas de alunos *campesinos* inseridos em uma escola urbana de Campo Grande – MS (*An analysis of interviews with peasant students enrolled in an urban school in Campo Grande – MS)*
23	BRITTO, S. L. M; BAYER, A. A economia doméstica e *rural* presente no capítulo XII da obra Rechenbuch Für Duetsche Schulen In Brasillien 2º Heft, de Matheus Grümm (*The domestic and rural economy present in chapter XII of the work Rechenbuch Für Duetsche Schulen In Brasillien 2º Heft, by Matheus Grümm)*
24	SALES, M. S. de; SEVERINO FILHO, J. Medidas agrárias, utilizadas pelos moradores do território quilombola vão grande, na cubagem de *terra* *(Agrarian measures, used by residents of the quilombola territory, go great in terms of land volume)*
25	OLIVEIRA, G. K. S. de; FIGUEIREDO, T. D. Oficinas pedagógicas em uma *escola rural*: um relato e tantas experiências (*Pedagogical workshops in a rural school: a report and many experiences*)
26	SOUZA, G. dos S. de; ANDRADE, M. M. Uma casa escolar *rural* e uma história contada pela professora Neuza (*A rural school house and a story told by teacher Neuza*)
27	SIEGLOCH, A; SOUZA, D. W. N. de; ARAÚJO, V. A. de; TAVARES, R. de S; MARQUES, P. T. F; FAÇANHA, A. B. Mobilização de saberes matemáticos em práticas *agrícolas* de uma comunidade ribeirinha do sul do Amazonas: contribuições da teoria antropológica do didático (*Mobilization of mathematical knowledge in agricultural practices of a riverside community in southern Amazonas: contributions from the anthropological theory of didactics)*

28	NETO, V; GUIDA, A. Redes discursivas: animais, *campo*, matemática escolar e contribuições metodológicas da análise de redes (*Discursive networks: animals, field, school mathematics and methodological contributions of network analysis)*
29	RODRIGUES, J. Um olhar sobre a possível contribuição da etnomatemática no ensino de matemática para alunos de uma escola da cidade de piracema na zona *rural* de Minas Gerais (*A look at the possible contribution of ethnomathematics in teaching mathematics to students at a school in the city of Piracema in the rural area of Minas Gerais)*
30	MAGNUS, M. C. M. *Campo* enquanto espaço de produção de saberes (*Field as a space for the production of knowledge)*
31	ANDREATTA, C; ALLEVATO, N. S. G. Ensino-aprendizagem-avaliação de matemática através de resolução de problemas em uma escola comunitária *rural* *(Teaching-learning-evaluation of mathematics through problem solving in a rural community school)*
32	PRANKE, A. Etnomatemática do contexto *agrícola*: contribuições para a elaboração de problemas de matemática (*Ethnomathematics of the agricultural context: contributions to the elaboration of mathematics problems)*
33	PIOVESAN, C; FONSECA, M. S. da. Um estado do conhecimento sobre a *agricultura* familiar na perspectiva etnomatemática (*A state of knowledge about family farming from an ethnomathematical perspective*)
34	GONÇALVES, N. C; MATTOS, J. R. L. de. O ensino de matemática na escola família *agrícola* de Orizona: teoria e prática (*The teaching of mathematics in the agricultural family school in Orizona: theory and practice*)
35	SANTOS, E. L; SILVA, L. P. da. O exercício da matemática e a vida no campo numa abordagem sobre o conteúdo, espaço e forma nas séries iniciais do ensino fundamental: um estudo em *escolas rurais* de Sergipe (*The exercise of mathematics and life in the countryside in an approach to content, space and form in the initial grades of elementary school: a study in rural schools in Sergipe*)
36	VIEIRA, V. da L; ROSA, M. Ensino da geometria na escola família *agrícola*: a construção do conhecimento geométrico sob a perspectiva da alternância e da etnomatemática (*Geometry teaching in the agricultural family school: the construction of geometric knowledge from the perspective of alternation and ethnomathematics*)
37	DIAS, R. C. A; DAMASCENO, F. L. de O; SILVA, R. A. O ensino da matemática em *escola do campo*: uma abordagem dinâmica para o estudo de unidades de medidas agrárias realizada por licenciandos em matemática do IFAP (*Mathematics teaching in rural schools: a dynamic approach to the study of agricultural measurement units carried out by mathematics graduates from IFAP*)
38	VIEIRA, V. G; PEREIRA, L. B. C; ELEUTERIO, R. de C. O uso das tic's no ensino da matemática das *escolas do campo*: reflexões sobre o município de quedas do Iguaçu – PR (*The use of ICTs in the teaching of mathematics in rural schools: reflections on the city of Quedas do Iguaçu – PR*)
39	OLIVEIRA, R. D. de; SALANDIM, M. E. M. Elogio de uma *escola rural*: notas à margem da História da Educação Matemática a partir de uma entrevista (*Praise for a rural school: notes on the margins of the History of Mathematics Education based on an interview*)

40	PAIVA, T. F. de. O uso de recursos didático – matemáticos para o processo de ensino e aprendizagem de estudantes dos anos finais de uma *escola do campo* do DF (*The use of didactic-mathematical resources for the teaching and learning process of students in the final years of a school in the countryside of the Federal District*)
41	SANTOS, J. G. de C; SACHS, L. Um dedo de prosa com uma egressa de um curso de licenciatura em *educação do campo* sobre a formação de professores de matemática (*A bit of chat with a graduate of a degree course in countryside education about the education of mathematics teachers*)
42	LIMA, A. S. de; LIMA, I. M. da S. A formação de professores de matemática em cursos de licenciatura em *educação do campo*: uma análise da matriz curricular (*The formation of mathematics teachers in degree courses in countryside education: an analysis of the curriculum matrix*)
43	MEDEIROS, D. J. de; LIMA, I. M. da S. Letramento estatístico em livros didáticos adotados por *escolas do campo* do agreste pernambucano: uma análise à luz da educação matemática crítica (*Statistical literacy in textbooks adopted by schools in the countryside of Pernambuco: an analysis in the light of critical mathematics education*)
44	SACHS, L. Uma proposta de diálogo entre conhecimentos: aproximando a etnomatemática e a *educação do campo* *(A proposal for dialogue between knowledge: bringing ethnomathematics and countryside education closer together)*
45	MAGNUS, M. C. M. Modelagem matemática na *educação do campo*: alunas (os) em movimento (*Mathematical modeling in countryside education: students on the move*)
46	CUNHA, M. C. da; WAGNER, D. R. Enlaces entre modelagem matemática, estágio supervisionado e *educação do campo*: relato de uma experiência formativa (*Links between mathematical modeling, supervised internship and countryside education: report of a formative experience*)
47	SILVA, U. M; BICHO, J. S. Etnomatemática e relações interdisciplinares na *educação do campo*: a partir da horta mandala (*Ethnomathematics and interdisciplinary relations in countryside education: from the mandala garden)*
48	NOGUEIRA, A. A. C; CORRÊA, L. G; SACHS, L. A (não) *educação do campo* em um município paranaense (*The (non) education of the countryside in a city in Paraná)*
49	ELEUTERIO, R. de C; PEREIRA, L. B. C; DUFECK, L. de F; VIEIRA, V. G. O ensino de matemática na *escola do campo*: contribuição de uma prática docente à luz da etnomatemática (*The teaching of mathematics in rural schools: contribution of a teaching practice in the light of ethnomathematics*)

Source: Elaborated by the authors.

From a comparative analysis of the data in Tables 1, 2 and 3, there are indications that, in the 2013 edition of the ENEM, there was an initiation for the establishment of relations between the two areas: Mathematics Education and Countryside Education. In the 2016 edition, the focus was on teacher training, and, in the 2019 edition, on teaching practices with an emphasis on school mathematics content/concepts.

Faced with this finding, in the second and third phase of the content analysis, set out in the next section, the 49 works will be analyzed in four categories that were constituted from the grouping of the identified entries, considered as registration units from the perspective of the content analysis: experiences in teaching and learning processes; teacher training and teaching action; dialogues between Mathematics Education and Countryside Education; and mathematical knowledge of peasants. In addition, the focus of the analysis of this mapping is close to the six categories established by Monteiro (2018).

Exploration of the Material and Treatment of Results and Interpretations

The distribution of publications in the four categories shows the predominance of studies that deal with "Experiences in teaching and learning processes" (Table 4). In this category, there are studies that focus on Basic Education students, as well as the use of different trends and/or teaching methodologies, namely: ethnomathematics (P15, P29, P32, P34, P35, P36, P37, P47, P49), mathematical modeling (P46), critical mathematics (P15), problem solving (P31), interdisciplinarity (P34, P47), didactic (P40) and technological resources (P38), pedagogical alternation (P36), workshops (P25, P37) and Mathematical Olympiads (P20). In addition, P3 and P22 bring reflections on students from the countryside inserted in urban schools, discussing, for example, long-distance travel to access education.

Table 4 – Distribution of productions according to categories

Main Focus	XI Enem (2013)	XII Enem (2016)	XIII Enem (2019)	Total
Interlocutions between Mathematics Education and Countryside Education	P1, P2	P4, P6, P17, P18	P23, P28, P30, P43, P44, P48	12
Teacher training and teaching action		P5, P7, P8 P9, P10, P11, P14, P16, P19	P41, P42, P45, P26, P39	14
Experiences in teaching and learning processes	P3	P15, P20	P22, P25, P29, P31, P32, P34, P35, P36, P37, P38, P40, P46, P47, P49	17
Mathematical knowledge of peasants		P12, P13	P21, P24, P27, P33	6

Source: Elaborated by the authors.

The category "Teacher training and teaching action" involved productions that analyzed pedagogical political projects and/or curricular matrices of the degree courses in Countryside Education (P5, P7, P10, P42); that have as subjects graduates in Countryside Education, to identify and understand which literacies and literacy practices are present in the curriculum development of a discipline that contemplates the content of functions (P9); that verify reflections on learning processes of a concept, from classes that emphasize mathematical investigations (P11);

that problematize the constitution of the rural mathematician educator in formative spaces/places in community time and university time (P14); that identify and analyze ways of understanding a curricular proposal related both to training and to the practices of teaching mathematics in the rural context (P16); that give visibility to a modeling activity that aims to analyze situations linked to the students' daily practices (P45).

In addition, in this category, there are publications that have teachers as research subjects (P39, P41), another related to a university extension (P25), and one that highlights contemporary challenges (P8). Even focusing on discussing teacher training, there are studies that address theoretical-methodological trends in teaching, such as ethnomathematics (P5 and P9), critical mathematics education (P7, P42), mathematical investigations (P11), the pedagogical alternation (P7, P19, P42) and mathematical modeling (P45).

In the category "Interlocutions between Mathematics Education and Countryside Education", productions were identified that sought to reflect articulations between the areas through the approach of critical mathematics education (P2, P4, P6 and P43), Ethnomathematics (P44), mathematical modeling (P30), education in values and citizenship (P17). But studies were also observed that deal with textbooks made available to rural schools (P18, P28 and P43), mapping (P1), analysis of a chapter of the work *Rechenbuch Für Deutsche Schulen in Brasillien* (P23) and discussions regarding the unenforceability of Countryside Education development in a given city (P48).

The category with the lowest occurrence rate deals with "Mathematical knowledge of peasants" explored in different contexts: riverside communities (P13, P27), rural settlement (P12), rural communities (P21), quilombola territory (P24) and family farming (P33). Research indicates that sociocultural practices subsidize the constitution of sources that promote sociocultural knowledge, consequently enhancing the teaching of mathematics and, consequently, the better academic development of students. In addition, investigations are observed from the perspective of ethnomathematics (P12, P21, P24, P27 and P33), presenting it as an alternative that allows establishing relationships between peasant and school knowledge, in particular, the agricultural context in the area of mathematics.

Given the above, it appears that in all four categories there were approximations with the theoretical and methodological tendencies of Mathematics Education, mainly, ethnomathematics. This fact can contribute to the understanding of reality and peasant specificities in the classroom with regard to the study of mathematical content/concepts (Cavalcante, 2015).

Among the results, only from ENEM 2019, 10 publications (34.48% of this edition) were identified that addressed contents/concepts of school mathematics contextualized in everyday life and referring to five thematic units, according to the distribution shown in the Table 5.

Table 5 – Distribution of productions according to the thematic unit

P	Thematic Unit	Theoretical-methodological tendency	Description of the context of mathematics in everyday life
30	Algebra	Mathematical modeling	Financial cost situations in poultry farming
45			Financial situations for marketing products
46			Relationship between mathematics and agroecology
43	Statistic	Modeling Critical Mathematics Education (Textbook analysis))	Relations between statistics and peasantry
35	Geometry	Ethnomathematics	Relationships between geometric objects and physical objects (natural or man-made)
36		Ethnomathematics Pedagogy of alternation	Relationships between geometric objects in different environments (school/family/community)
37	Sizes and Measures	Ethnomathematics	Understanding of agrarian measures
47		Ethnomathematics Interdisciplinarity	Relationships between elements of science and mathematics
23	Numbers	(Textbook analysis)	Financial situations related to the domestic and rural economy
29		Ethnomathematics	Financial situations that approximate experiential mathematical knowledge to those developed in the classroom

Source: Elaborated by the authors.

From the analysis of Chart 5, it is observed that financial situations supported discussions in two thematic units (algebra and numbers) and is the context with the highest incidence rate. In view of the above, we turn our attention to the four productions (P23, P29, P30, P45) that deal with the process of teaching and learning content/concepts contextualized from financial situations, considering mathematical and/or non-mathematical arguments.

P23 analyzes the work *Rechenbuch Für Deutsche Schulen in Brasillien 2º Heft*, by Mateus Grümm, which addresses calculations of domestic and rural economy in order to assist in the control of commercial aspects - income and expenses, financial - budgets and management of productions in rural areas.

P45, in turn, seeks to give visibility to a mathematical modeling activity through a report that describes activities carried out by two groups of graduates in Countryside Education, involving practices related to the production and sales (expense, revenue and profit) of cakes and ornamental plants. And P30, reports activities developed in the research called "Mathematical Modeling in Countryside Education: visibility of local knowledge", whose author is a coordinator. In P45 and P30, it is understood that mathematical modeling is characterized as a pro-

pitious environment for debates on social practices in the countryside, taking peasants' knowledge as a starting point, evidencing their own mathematics that can approximate or subsidize academic knowledge.

P29 also seeks approximations between Mathematics Education and Countryside Education through ethnomathematics, discussing everyday problems experienced by subjects who belong to different cultural groups. In addition, the article considers that pedagogical works with Financial Education contents are relevant for the promotion of citizenship, since they contribute to decision-making in relation to commercial and financial situations.

Finally, P23 does not refer to a specific theoretical-methodological trend, but is characterized as a study within the scope of the history of mathematics education, when analyzing a book that presents everyday experiences of a practical and utilitarian nature. In addition, it emphasizes that such actions, at the same time, would be part of the so-called Financial Education, since, based on the work's proposal, calculations were not performed just for calculation's sake.

This result, combined with the fact that P43 also analyzes textbooks in the context of Countryside Education - considering the statistical thematic unit - points to the importance of this resource, as well as of government programs that subsidize the production and distribution of books, as it is the case of PNLD Campo. However, Cavalcanti and Carvalho (2021, p. 15) point out that nowadays there is:

> [...] the setback of some actions and programs, such as the extinction of textbooks for rural schools, in an attempt to standardize teaching across the country, in accordance with prerogatives established by the BNCC, disregarding, in curricular terms, the specificities of each modality of teaching.

Thus, it becomes essential to develop other studies that assess textbooks in the light of theoretical-methodological contributions from Countryside Education, Mathematics Education and the interrelationships observed in this study.

Final Considerations

In this research, 49 productions identified in three editions of ENEM (2013, 2016, 2019) were analyzed, using 17 entries contained in Barbosa, Carvalho and Elias (2013; 2014) and three others observed in current publications and in the Dicionário da Educação do Campo (*Countryside Education Dictionary*) (Caldart et al., 2012). Thus, an update of the data obtained by Barbosa, Carvalho and Elias (2013; 2014) was performed based on the constitution of four categories: experiences in teaching and learning processes; teacher training and teaching action; dialogues between Mathematics Education and Countryside Education; and mathematical knowledge of peasants.

It appears that in the 2013 ENEM edition there was a certain "beginning" for the establishment of relationships between these two

areas: Mathematics Education and Countryside Education. This is because, of the three studies identified in this edition of the event, two of them deal with theoretical aspects. In the 2016 edition, the focus is on teacher education, as of the 17 productions identified, nine were categorized in Teacher Training and teaching action. Finally, in the 2019 edition, the focus is on teaching practices with an emphasis on contents/concepts of school mathematics, with 14 of the 29 works in this edition of the event.

Through the study carried out, it was possible to identify that none of the productions deals specifically with the textbooks of the PNLD Campo. In this sense, they are studies to be considered in order to contemplate the contents/concepts of mathematics in the early years of Elementary School. In addition, perspectives can be pointed out for new investigations that consider other search repositories, such as, for example, other events in the area of Mathematics Education, namely: Ebrapem, Sipem, Degrees forum, etc. As well as investigations of the next edition of ENEM (XIV), which will address the theme "Mathematics Education, School and Teaching - what brought us Ubiratan D'Ambrosio" to be held virtually in 2022.

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Notes

1 This article is part of studies carried out within the scope of the research group EMgep/UFSM – Mathematics Education: a study and research group linked to the Universidade Federal de Santa Maria.

2 Bolema was created in 1985 and linked to Unesp/Rio Claro; Zetetiké was founded in 1993 and linked to the Faculty of Education/Unicamp.

3 In 2022, there are 15 groups: GT1 – Mathematics in Early Childhood Education and in the Early Years of Elementary Education, GT2 – Mathematics Education in the Final Years of Elementary and High School, GT3 – Curriculum and Mathematics Education, GT4 – Mathematics Education in Higher Education, GT5 – History of Mathematics and Culture, GT6 – Mathematics Education: Digital Technologies and Distance Education, GT7 – Training of teachers who teach Mathematics, GT8 – Assessment in Mathematics Education, GT9 – Cognitive and linguistic processes in Mathematics Education, GT10 – Mathematical Modeling , WG11 – Philosophy of Mathematics Education, WG12 – Statistical Education, WG13 – Difference, Inclusion and Mathematics Education, WG14 – Didactics of Mathematics and WG15 – History of Mathematics Education.

4 It should be noted that, in addition to the mapping carried out by Barbosa, Carvalho and Elias (2013; 2014), there are studies by Lima and Lima (2017), Monteiro (2018; 2020).

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Diandra Batirola Ledur has a degree in Mathematics and a Master's in Science Education from Universidade Federal de Santa Maria (UFSM). She is a Mathematics teacher at a state school in Guaporé / RS
ORCID: https://orcid.org/0000-0003-4024-4889
E-mail: diandraledur@hotmail.com

Juliana Gabriele Kiefer has a degree in Mathematics and a Master's in Mathematics Education from Universidade Federal de Santa Maria (UFSM). She is a doctoral student in Teaching Science and Mathematics at Universidade Franciscana (UFN).
ORCID: https://orcid.org/0000-0003-4912-5747
E-mail: juliana_kiefer@hotmail.com

Rita de Cássia Pistóia Mariani has a degree in Mathematics and a Master's in Education from Universidade Federal de Santa Maria (UFSM). She holds a PhD in Mathematics Education from Pontifícia Universidade Católica de São Paulo (PUC-SP). She is an associate professor at UFSM.
ORCID: https://orcid.org/0000-0002-8202-8351
E-mail: rcpmariani@yahoo.com.br

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