

RURAL EDUCATION AND THE TRAINING OF MATHEMATICS TEACHERS: AN ANALYSIS OF CURRICULAR DOCUMENTS FROM THE STATE OF RONDÔNIA

EDUCAÇÃO DO CAMPO E A FORMAÇÃO DE PROFESSORAS/ES DE MATEMÁTICA: UMA ANÁLISE DE DOCUMENTOS CURRICULARES DO ESTADO DE RONDÔNIA

EDUCACIÓN RURAL Y FORMACIÓN DE PROFESORES DE MATEMÁTICAS: UN ANÁLISIS DE LOS DOCUMENTOS CURRICULARES DEL ESTADO DE RONDÔNIA

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RESUMEN

Este artículo reporta una investigación sobre la presencia o ausencia de los fundamentos de la Educación del Campo (EduC) en los Proyectos Pedagógicos de Curso (PPC) de los programas de Licenciatura en Matemáticas ofrecidos por instituciones públicas de educación superior en el estado de Rondônia, Brasil. Partiendo de las demandas históricas de los movimientos sociales que abogan por una formación docente contextualizada a las especificidades del campo, el estudio analiza documentos curriculares utilizando el análisis documental. El trabajo resalta la importancia de la Educación del Campo como un campo discursivo basado en principios de justicia social, derecho a la tierra y reforma agraria. A partir de las dimensiones analizadas, se identifican brechas en la articulación explícita entre los currículos y los fundamentos de la EduC, a pesar de que el Plan de Desarrollo Estatal de Rondônia (PDES 2015–2030) incluye directrices que contemplan la creación de una Facultad Estatal Rural. Los resultados evidencian que, aunque algunas corrientes como la Educación Matemática y la Etnomatemática son recurrentes en los PPC analizados, el enfoque sobre la Educación del Campo aparece de manera limitada y fragmentada. Solo los PPC de algunos de los cursos investigados presentan referencias directas al tema, pero sin un desarrollo teórico profundo. Además, existe una carencia de formación específica para profesores de Matemáticas orientada al contexto de las escuelas rurales. Finalmente, el artículo

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reflexiona sobre la necesidad de revisar los currículos de los programas de Licenciatura en Matemáticas y de ampliar la Licenciatura en Educación del Campo (LEduC) para incluir la formación de docentes en Matemáticas. Se concluye que, al integrar los principios de la EduC en los currículos, las instituciones públicas pueden actuar como agentes de transformación social, promoviendo una educación emancipadora y alineada con las demandas de las poblaciones rurales.

Palabras clave: Educación del Campo. Licenciatura en Matemáticas. Currículo. Proyecto Pedagógico de Curso. Justicia Social.

ABSTRACT

This article reports an investigation on the presence or absence of the principles of Rural Education (Educação do Campo - EdoC) in the Pedagogical Course Projects (PPC) of Mathematics Teaching degree programs offered by public higher education institutions in the state of Rondônia, Brazil. Grounded in the historical demands of social movements advocating for teacher training that is contextualized to the specificities of rural areas, the study analyzes curriculum documents using a documentary analysis. The work highlights the importance of Rural Education as a discursive field based on principles of social justice, land rights, and agrarian reform. From the dimensions analyzed, gaps are identified in the explicit articulation between the curricula and the principles of EdoC, despite the fact that the Rondônia State Development Plan (PDES 2015–2030) includes guidelines for creating a State Rural College. The results show that while some aspects, such as Mathematical Education and Ethnomathematics, are recurrent in the PPC analyzed, the approach to Rural Education appears limited and fragmented. Only the PPC of a few of the investigated programs include direct references to the subject, and even then, without theoretical depth. Furthermore, there is a lack of specific training for Mathematics teachers designed for the rural school context. Finally, the article reflects on the need for curricular revisions in Mathematics Teaching degree programs and the expansion of the Rural Education Teaching degree program (LEdoC) to encompass the training of Mathematics teachers. It concludes that by integrating the principles of EdoC into their curricula, public institutions can act as agents of social transformation, promoting an emancipatory education aligned with the needs of rural populations.

Keywords: Rural Education. Mathematics Teaching Degree. Curriculum. Pedagogical Course Project. Social Justice.

RESUMO

Este artigo relata uma investigação que objetiva analisar a presença ou ausência de fundamentos da Educação do Campo (EdoC) nos Projetos Pedagógicos de Curso (PPC) dos cursos de Licenciatura em Matemática ofertados por instituições públicas de ensino superior no estado de Rondônia. Partindo das demandas históricas dos movimentos sociais, que reivindicam uma formação docente contextualizada às especificidades do campo, o estudo analisa documentos curriculares com base na análise documental. O trabalho destaca a importância da Educação do Campo como um âmbito discursivo fundamentado em princípios de justiça social, direito à terra e reforma agrária. A partir das dimensões analisadas, identificam-se lacunas na articulação explícita entre os currículos e os fundamentos da EdoC, apesar de o Plano de Desenvolvimento Estadual de Rondônia (PDES 2015-2030) apresentar diretrizes que incluem a criação de uma Faculdade Estadual Rural. Os resultados evidenciam que, embora algumas dispersões como Educação Matemática e Etnomatemática sejam recorrentes nos PPC analisados, a abordagem da Educação do Campo aparece de forma limitada e fragmentada. Apenas os PPC de alguns dos cursos investigados apresentam referências diretas à temática, mas sem aprofundamento teórico. Além disso, há uma carência de formação específica para professores de Matemática voltada ao contexto das escolas do campo. Por fim, o artigo reflete sobre a necessidade de revisão curricular dos cursos de Licenciatura em Matemática e a ampliação da Licenciatura em Educação do Campo (LEdoC) para contemplar a formação de docentes de Matemática. Conclui-se que, ao integrar princípios da EdoC aos

currículos, as instituições públicas podem atuar como agentes de transformação social, promovendo uma educação emancipatória e alinhada às demandas das populações camponesas.

Palavras-chave: Educação do Campo. Licenciatura de Matemática. Currículo. Projeto Pedagógico de Curso. Justiça Social.

1 INTRODUCTION

One of the main demands of social movements linked to Rural Education (EdoC) refers to training teachers for Elementary and High Schools. This training must be aligned with the specificities of the countryside, addressing topics such as agrarian reform, production methods, and family farming, among others. Thus, teachers are expected to be able to integrate these issues into the curriculum, providing contextualized and relevant education for rural populations.

In this context, a pilot project for a Bachelor's Degree in Rural Education (LEdoC) emerged in Brazil, which expanded through calls for proposals launched by the Ministry of Education (MEC) in 2009 and 2012 and, according to Caldart (2019), was created to be a cornerstone of EdoC. The training proposal of the courses, according to Scariot *et al.* (2020, p. 6), envisions teachers “qualified to teach in the countryside” in various areas of knowledge, including “Natural Sciences and Mathematics, Languages, Humanities, and Social Sciences, or even Agricultural Sciences,” and may also work in the management of rural schools, which “in addition to interdisciplinarity, operate with the pedagogy of alternation” (Trevisan; Dalcin, 2020, p. 212).

The Federal University of Rondônia (UNIR), specifically the Rolim de Moura campus, participated in Public Call No. 02, dated August 31, 2012, from the Secretariat of Continuing Education, Literacy, Diversity, and Inclusion (SECADI) of the MEC. The proposal submitted by UNIR arises from collective articulation with social movements linked to the countryside, aiming to implement a course with qualifications in Natural Sciences, Humanities, and Social Sciences, “given the lack of professionals in these areas of knowledge and who meet the specific realities of the countryside” (UNIR, 2014, p. 5). Highlighted in the section that deals with the general objective of the course, there is mention of a commitment to contribute to the training of future teachers in “consonance with the specific socioeconomic and cultural reality of the populations of the countryside” (UNIR, 2014, p. 13) since there is no “public higher education

course offering in the region, as well as graduate teachers to work with specific training for the reality of the countryside” (UNIR, 2014, p. 11).

Thus, after the approval of the aforementioned proposal, implementing LEdoC in the state of Rondônia is effective. However, given the choice of qualifications at the time of the construction of the proposal for the MEC call, a course that explicitly qualifies teachers to teach mathematics at EdoC in the final years of Elementary and High Schools was not implemented. In this sense, it seems pertinent to investigate the training of mathematics teachers, asking: What training courses meet the aforementioned levels of education and consider the specificities of Rural Education, as demanded by social movements in the state of Rondônia?

In conceptual terms, this study is based on the ideals of Rural Education, which (re)identifies rural subjects in their pluralities, valuing their different practices and knowledge, their diversities – such as the diversification of production through family farming – and pursuing an emancipatory education for peasant women and men. This education is linked to the right to land and agrarian reform, with these rural subjects being collective, historical, and social people. In other words, the study considers that:

subjects from different social struggles come together to organize a common struggle: the struggle of those who live and work in the countryside for access to public education, which has historically been denied to them. This struggle begins by guaranteeing public schools in the countryside, which can be built as rural schools (Caldart, 2019, p. 59).

In other words, this research is aligned with the foundations of Rural Education according to Caldart (2019), namely: “1) in the struggle of collective subjects of rural work; 2) in peasant agriculture (struggle, work, culture) and in the class confrontation that drives its historical development; 3) in a conception of education with an emancipatory purpose” (Caldart, 2019, p. 59).

Methodologically, the study consists of a documentary analysis, which will follow the assumptions of Cellard (2012), adopting an interpretative perspective of curriculum as a social and historical action of subjects engaged in struggles for social justice that, by identifying and assuming the defense of cultural policies of difference, combines them coherently with the social and economic policy of equality (Fraser, 2006; 2009), to analyze curricular documents. To this end, the curricular documents that are the object of analysis of this study are the

Pedagogical Course Projects (PPC) of the Degree in Mathematics and the Degree in Rural Education of public higher education institutions in Rondônia.

After searching the institutions' websites, the Mathematics Degree courses offered by the institutions in the state were identified. Then, the PPCs were located and submitted to analysis in light of the research question, procedurally considering the presence and/or absence of foundations of Rural Education, according to Caldart (2019), in curricular documents of the Mathematics Degree courses of public institutions in the state of Rondônia. In this sense, in practical terms, this article aims to analyze the presence or absence of foundations of Rural Education in the Pedagogical Course Projects of the Mathematics Degree courses offered by public higher education institutions in Rondônia.

Thus, in structural terms, this text presents five sections constructed according to the dimensions proposed by Cellard (2012), namely, a) Context; b) Authors; c) Authenticity and Reliability; d) Nature of the Text; and e) Key Concepts and Internal Logic. The *Context* section highlights the socioeconomic and educational characteristics of the state of Rondônia, the characteristics of the locations where the institutions are located, and their respective PPCs. The section introducing the *Authors* emphasizes the participants in the preparation process for each document analyzed. A third section of the text discusses *Authenticity, Reliability, and the Nature of the Text*. A fourth section, *Key Concepts and the Internal Logic of the Text* was woven, considering dispersions based on a Foucaultian conception. Finally, the *Analysis* section elaborates on the absences and/or presences of EdoC foundations, according to what Caldart (2019) proposed in curricular documents for initial training of Mathematics Degree courses in Rondônia.

2 METHODOLOGICAL PATH

2.1 Data composition

Methodologically, this study is structured based on documentary analysis, focusing on the Pedagogical Projects of Undergraduate Courses in Mathematics and Rural Education at public institutions in Rondônia. The analysis follows the guidelines of Cellard (2012) and examines the presence of foundations of Rural Education in the curricular documents of these courses, according to Caldart (2019). We adopted a perspective of curriculum as social and historical action, investigating the alignment of the PPCs with the demands of social movements

for an education focused on the rural context and social justice, based not only on the latter but also on the cultural and economic policies of equality and difference proposed by Fraser (2006; 2009).

The most recent PPCs, available on the institutions' websites, were mapped to identify elements of Rural Education. The PPCs were analyzed according to five dimensions: a) Context, considering local political, social, and economic characteristics; b) Authors, investigating the identities and roles of those responsible for the documents; c) Authenticity and Reliability, ensuring textual quality; d) Nature of the Text, focusing on curricula as structuring standards for training; and e) Key Concepts and Internal Logic, using Foucault's concept of "dispersions" to explore themes such as Rural Education, Ethnomathematics and agrarian reform, considering whether the curricular proposals of the courses meet the specificities demanded by social movements.

The analysis, supported by the concept of dispersion, corroborates what was already defended by Souza (2006, p. 66), admitting that "there is no isolated statement" as they gain meaning in a structural set that gives them strength. The analysis of the curricular documents seeks to identify terms and/or expressions that maintain enunciative relations among themselves to examine the presence and/or absence of foundations of Rural Education. According to Foucault (2008, p. 132), statements do not establish "a condition of possibility but a law of coexistence, and since statements are not interchangeable elements but groups characterized by the modality of their existence" (Foucault, 2008, p. 132). Therefore, the dispersion reveals laws of coexistence that can indicate whether the guidelines for curricula expressed in the documents analyzed reflect the specificity of EdoC in the courses investigated.

2.2 The analyses

2.2.1 Context - The State of Rondônia

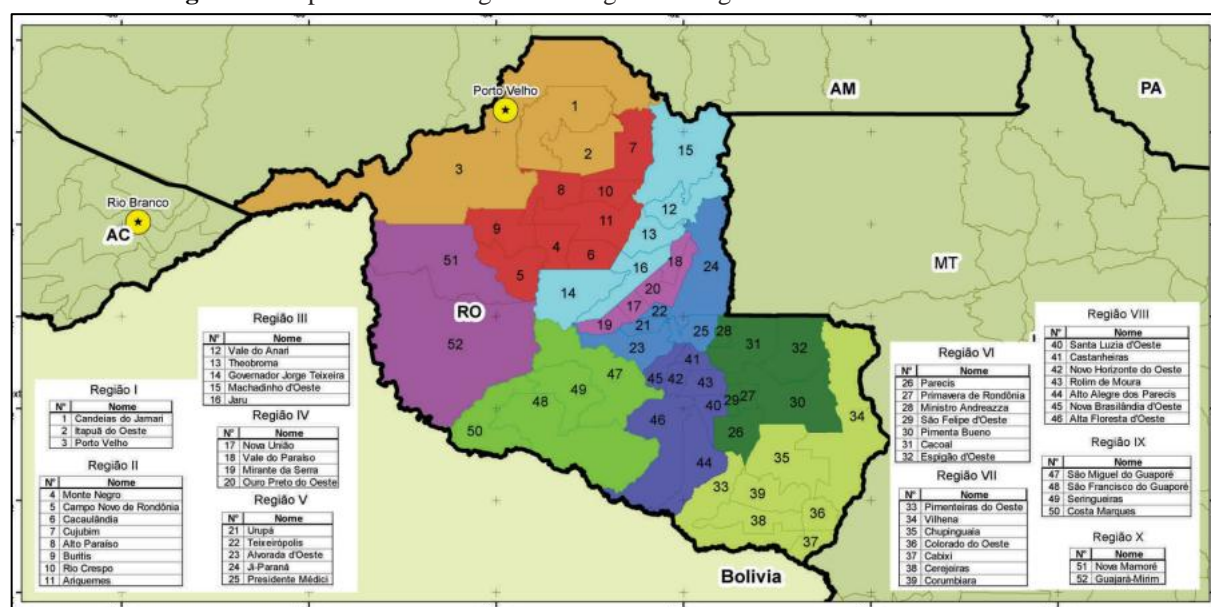
The state of Rondônia is located in the northern region of Brazil. It has 52 municipalities and occupies an area of 237,590.547 km². The population is 1,581,016, and the demographic density is 6.65 inhabitants per square kilometer.

Rondônia is one of the most recent states in the Federation. Its origins date back to the 1950s, when the federal government officially created several territories, including the Federal

Territory of Guaporé. In 1956, its name was changed to the Federal Territory of Rondônia, and finally, in 1981, it acquired the status of a state, keeping the same name.

Subsequent studies divided the 52 municipalities into ten Planning and Management Regions in 2007, established by Complementary Law No. 414 of December 28, 2007. This division sought to respect the regions' identities and common characteristics to guide the planning and territorialization of public policies. Figure 1 illustrates this division, complemented by the information presented in Figure 2.

Figure 1: Map of the Planning and Management Regions of the State of Rondônia



Source: Rondônia (2015, p. 30)

Figure 2: Caption and cartographic information for Figure 1



Source: Rondônia (2015, p. 30)

The Sustainable Rondônia State Development Plan (PDES) – 2015-2030 (Rondônia, 2015, p. 63) states that family farming is the leading supplier of products for regional consumption and small local agro-industries. Small producers organize themselves through

associations, cooperatives, and, above all, the Rural Workers Union (STTR) under the coordination of the Federation of Agricultural Workers of Rondônia (FETAGRO). These institutions promote actions that enable thousands of families and young people to remain in the countryside. The document also presents data highlighting the potential of family farming in the state.

In Rondônia, family farming encompasses more than 75,000 establishments and accounts for approximately 74% of the gross value of agricultural production in the state, employing more than 233,000 people, corresponding to 84% of the workforce employed in the countryside. It also accounts for 90% of coffee production, 93% of beans, 92% of cassava, 82% of milk, 65% of poultry, and 49% of cattle (IBGE/PAM, 2013; IBGE/PPM, 2013). Its importance is also evident in providing food security for the population in general by producing approximately 70% of food. The significance of this production category is also expressed throughout the Northern Region (Rondônia, 2015, p. 63).

The PDES (Rondônia, 2015, pp. 129-131) projects the state from 2015 to 2030. It includes an education program that stands out among the 16 proposed actions for its relevance to the discussions in this text: action 10, *Rural Education*, and action 15, *Implementation of the Abaitará State Institute of Rural Education Project*, with their respective indicators shown in Table 1.

Table 1 - Education Program for EdoC and rural education in Rondônia

Action	Indicators
10. Rural Education	Rate of increase in the rural population's education level in high school.
	Rate of increase in the rural population's level in elementary school.
	Rate of implementation of secondary education combined with professional education.
	Rate of expansion of the number of places available in elementary and high schools combined with professional education.
15. Implementation of the Abaitará State Institute of Rural Education Project	Institutional development plan for the implementation of the State Rural College developed.
	Physical structure, human resources, and budget for the implementation of the State Rural College implemented.

Source: Prepared by the authors based on the 2015 PDES

It is important to understand the context of the state's Basic Education to understand the proposals contained in the PDES. Currently, Rondônia has three education networks: municipal, state, and federal. According to the 2022 School Census, the state's public network has 1,058 institutions that provide Basic Education, distributed among the municipalities, the state, and the federation.

Also, according to the 2022 Census, the municipal education network currently has 640 schools, of which 387 (60.47%) are located in urban areas and 253 (39.53%) in rural areas. The

state network is responsible for 408 schools, of which 289 (70.84%) are in urban areas and 119 (29.16%) in rural areas. At the federal level, there are only ten schools, of which eight (80%) are located in urban areas and two (20%) in rural areas.

In addition, municipalities are responsible for a significantly higher proportion of schools in rural areas than the state, with a difference of more than 10% (2022 Census). This difference is even more pronounced in the federal network, as shown in Table 2 below.

Table 2 - 2010 and 2022 School Census in the State of Rondônia

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Municipal Network	Urban 2010	Urban 2023	An increase of 105* schools in the urban area.	Rural 2010	Rural 2023	A decrease of 367* schools in the rural area
	288	393		607	240	
*The Census uses the rural nomenclature to name schools in rural areas, not the countryside.						
State Network	Urban 2010	Urban 2023	A decrease of 11* schools in the urban area.	Rural 2010	Rural 2023	An increase of 06* schools in the rural area.
	300	289		113	119	
Federal Network	Urban 2010	Urban 2023	An increase of 07* schools in the urban area.	Rural 2010	Rural 2023	There was no change in the number of schools offered.
	01	08		02	02	

Source: Prepared by the authors based on data from the Rondônia School Census (QEDU 2023)

<https://qedu.org.br/uf/11-rondonia/censo-escolar>

The data show that between 2010 and 2023, there was a significant movement of school closures in rural areas of the state's municipal education network, with the closure of 367 units. On the other hand, there was an increase of 105 units in urban areas. In the state network, there was a reduction of 11 schools in urban areas, but in rural areas, there was an increase of six units. The number of schools in urban areas increased at the federal level, while the number of units in rural areas remained unchanged over these 13 years.

The 1996 National Education Guidelines and Base Law (LDB) deals explicitly in Article 28 with providing Basic Education for the rural population, establishing that education systems must promote necessary adaptations to meet the peculiarities of the rural population and their respective regions. These include content and methodologies that meet students' interests and respect the phases of the agricultural cycle, climatic conditions, and suitability for the nature of work in the countryside. In its sole paragraph, there is the inclusion of Law No. 12,960 of 2014, which deals with the closure of rural, Indigenous, and *quilombola* schools, which must be "preceded by a statement from the regulatory body of the respective education system, which will consider the justification presented by the Department of Education, the

analysis of the diagnosis of the impact of the action and the statement from the school community” (Brasil, 1996).

After this brief introduction to the context of one of the newest states in the federation, located in the Brazilian Amazon, some relevant aspects are highlighted, such as the state planning for the period from 2015 to 2030, the closure of schools in rural areas and the importance of family farming, which has 75 thousand establishments and is responsible for approximately 74% of the gross value of state agricultural production.

2.2.2 Authors

2.2.2.1 The Mathematics Degree Courses in the State of Rondônia

As demonstrated in the section dedicated to methodological approaches, based on the dimensions proposed by Cellard (2012), the Pedagogical Course Projects of the Mathematics Degree courses of four public Higher Education institutions in Rondônia will be described.

The comments highlighted in each of the following dimensions aim to guide the analyses regarding the presence and/or absence of Rural Education foundations, according to Caldart (2019), in curricular documents of the v courses of public institutions in Rondônia described in Table 3. Among the four courses analyzed, two are offered by the Federal University of Rondônia (UNIR) and two by the Federal Institute of Rondônia (IFRO).

Table 3: Public institutions that offer Mathematics Degrees, campus, and year of implementation

Educational Institution	Location	Year of implementation
Federal University of Rondônia (UNIR)	Porto Velho	1983
	Ji-Paraná	1988
Federal Institute of Rondônia (IFRO)	Vilhena	2012
	Cacoal	2014

Source: Prepared by the authors.

It is important to note that the data in each analyzed document will be used and, whenever necessary, supplemented with more up-to-date information and data.

2.2.2.2 The Bachelor's Degree Course at the Porto Velho Campus (UNIR)

According to UNIR (2015), Porto Velho, the state capital and the city with the largest population, is home to one of UNIR's Bachelor's Degree courses in Mathematics. The

document addresses aspects related to the state's reality but does not emphasize the particularities of the region where the university is located. It also presents social data on the age groups of the population, indicating a reduction in illiteracy rates. Regarding economic aspects, it states that Rondônia is a state free of foot-and-mouth disease, and it is called the "Natural state of livestock farming" (UNIR, 2015, p. 7). Its economic vocation is based on agriculture, livestock farming, and plant and mineral extraction. Furthermore, the construction of the Madeira River power plants, through investments made, contributed to the acceleration of growth in economic activities.

The Bachelor's Degree in Mathematics course at UNIR, Porto Velho campus, was the first undergraduate course at a public higher education institution in Rondônia, implemented in 1983 in Porto Velho. Its creation aimed to meet the demand for mathematics teachers already working in the classroom without specific training. In 1987, the course was renamed the Science Course with a Specialization in Mathematics, covering subjects such as Mathematics, Biology, Physics, Chemistry, and Basic Notions of Geology. However, due to expressions of dissatisfaction from the academic community, in 1996, the course was restructured, resulting in a curricular change that changed the name from the Science Course with a Specialization in Mathematics to the Full Bachelor's Degree in Mathematics.

2.2.2.3 The Bachelor's Degree Course at the Ji-Paraná Campus (UNIR)

According to UNIR (2019), the course has undergone three reformulations over the years, specifically in 1992, 1999, and 2006, to meet the demands of each era. Initially, the Short Bachelor's Degree in Sciences with a specialization in Mathematics was offered, but it was discontinued in 1992. In its place, the Full Bachelor's Degree in Mathematics was created, which operated until 1999 as an extension of the Porto Velho course. With the approval of Resolution 334/CONSEPE¹ on January 14, 2000, the course gained its autonomy.

The course is in Ji-Paraná, part of the state's central region, and covers 11 municipalities with approximately 300 thousand inhabitants. It is the only in-person course in the area. Regarding the economic context, agricultural production was noted to be the sector that grew the most in the last 30 years, highlighting the statement that "the agricultural sector was directly

¹ Council for Teaching, Research, and Extension.

responsible for the state's economic growth.” In addition, it is important to emphasize that Ji-Paraná belongs to the Territory of Citizenship.

2.2.2.4 The Bachelor's Degree Course at the Vilhena Campus (IFRO)

The Political Pedagogical Project of the IFRO course, Vilhena campus, highlights that the city where the campus is located is located in the Southern Cone region of the state of Rondônia, which also includes the municipalities of Pimenta Bueno, Espigão do Oeste, Chupinguaia, Colorado do Oeste, Cabixi, Cerejeiras, Pimenteiras do Oeste, Corumbiara, and Parecis (IFRO, 2020, p. 8). This region has approximately 204,895 inhabitants, about 13% of the state's population.

Maintaining the course in Vilhena is justified by meeting the region's needs, considering that there are large territorial extensions with low population density in the country's northern region. In addition, economic centers are expanding, but there are still areas with a lack of transportation services and a significant shortage of professionals to meet social demand. The document also highlights the importance of access to Basic Education with licensed professionals, emphasizing that the region is still far from achieving the goals established in the National Education Plan concerning increasing enrollments in Higher Education.

According to the census, the municipality of Vilhena had a lower net school enrollment rate than that estimated by the PNE. In the microregion, this rate is even lower. Both are very far from what was recommended in the PNE, which established the goal of including 30% of young people between 18 and 24 years old in undergraduate studies by 2010. Goal 12 of the new PNE (2011-2020, in progress) is: “Increase the gross enrollment rate in higher education to 50% and the net rate to 33% of the population aged 18 to 24, ensuring the quality of the offer” (IFRO, 2020, p.15).

The course's PPC is updated by pointing out goals established in the National Education Plan (PNE) and that much remains to be done to achieve the goals established regarding the school enrollment rate.

2.2.2.5 The Bachelor's Degree Course at the Cacoal Campus (IFRO)

The Cacoal Campus was established strategically along BR 364, which required the development of “an educational institution that offered technical, technological and other

higher education courses” (IFRO, 2014, p. 11). In 2009, the Auta Raupp Municipal Agricultural Elementary School area, with approximately 51 hectares, was transferred to the IFRO in Cacoal.

The courses offered at the Auta Raupp School before its transfer to the IFRO aimed to provide training that would enable students to contribute to the family economy. As described by IFRO (2014, p. 11, emphasis added), “approximately 95% of the students came from rural areas; although, over time, more young people from urban areas began to enroll in the school, until the transition phase to the Federal Institute, a higher percentage of students were children of agricultural producers.” However, from 2009 onwards, the school began to face a regressive phase, culminating in its closure in 2014.

The document also mentions that the Cacoal Advanced Center was created in 2009 and linked to the Ji-Paraná Campus. In September of that year, “a public hearing was held to present the Institute and the results of a survey on regional economic activities, which partially supported the development of the pedagogical projects for the courses” (IFRO, 2014, p. 11). In this context, it was decided to offer the Technical Course in Agriculture and Livestock Farming Subsequent to High School. The curriculum document states that the degree was created to meet the demand for professionals trained in specific areas of basic education, especially in mathematics.

In summary, the PPCs of the UNIR courses had similar authoring processes, and in Porto Velho (UNIR, 2015), the restructuring of the PPC took place through meetings with professors who comprise the Structuring Teaching Center (NDE) of the mathematics course and students. The Exact and Earth Sciences Center (NCET) developed the checklist specifically for the Educational Affairs Technicians (TAE) group. The Ji-Paraná PPC was collectively created in the same way, based on fruitful discussions with the teaching staff, students, and graduates, and was systematized by the course’s NDE (UNIR, 2017).

The PPCs for the two IFRO courses show that their authors were professors from the institution. A committee of 11 members prepared both IFRO (2020) through Ordinance No. 139 of May 8, 2019, and Cacoal (2014) through Ordinance 84 of July 4, 2013/IFRO. The course at the Cacoal campus differed because it had four members who provided technical advice and document review.

2.2.3 Authenticity, reliability, and the nature of the texts

The Political-Pedagogical Projects (PPC) act as curricular documents that meet legal requirements, serving as essential instruments required by the Ministry of Education to evaluate and authorize courses offered by educational institutions.

In the context of the Federal University of Rondônia, the PPCs of the courses offered on both the Porto Velho and Ji-Paraná campuses highlight the guidance provided by Resolution No. 278/CONSEA²/UNIR, enacted on June 4, 2012. This resolution regulated and provided clear parameters and guidelines for preparing their respective PPCs. A relevant aspect of the documents is the inclusion of a topic on legislation, which lists a set of laws, decrees, ordinances, resolutions, and other regulations that ensure the reliability and authenticity of the PPCs. The legitimacy of the courses is proven by the fact that they are all approved, and the existence of the PPCs is an essential requirement for such validation. In addition, the curricular documents are available on the institutions' official websites, giving them the status of valid and current documents.

Regarding the Federal Institute's PPCs, the versions reformulated in 2020 for the Vilhena campus and in 2014 for the Cacoal campus present similar structures, reflecting an alignment in institutional guidelines. Both PPCs detail laws, decrees, and resolutions that guided their respective elaboration, demonstrating a rigorous standardization process. These documents were produced by committees appointed explicitly for this purpose, ensuring the content's authenticity and validity. In addition, the PPCs are available on the institution's official website, along with their respective recognitions, which resulted from subsequent evaluations carried out by the Ministry of Education. This evaluation and recognition process further reinforces the reliability of the documents, ensuring that the courses meet not only legal requirements but also social and academic expectations.

In short, the PPCs are not bureaucratic documents. They play a crucial role in structuring higher education, articulating the pedagogical vision of the institutions, and ensuring that the training offered is aligned with the demands of society and the job market. The careful preparation of these documents, based on clear regulations and rigorous procedures,

² Superior Academic Council.

demonstrates a commitment to educational quality and the training of competent professionals well prepared to face contemporary challenges.

2.2.4 Key concepts and internal logic of the text

According to Taveira and Peralta (2020, p. 517), “curricular documents materialize the intentions set out in official curricula and are used as a tool for curricular policies, which are established normatively, with the former as a means of expressing these.” Therefore, and understanding a curricular document as “a normative document that is central to the organization of the training projects subordinate to it” (idem), it is admitted:

that the analysis of such documents carries the potential to reveal the intentionality that, based on interests, characterizes the foundations of a curriculum and allows us to glimpse the explicit and implicit self-referenced training projects [...] Admitting curriculum as an amalgam of and between processes, in the constitution of a training project, for and following a model of society, exploring the discourses underlying the processes seems pertinent and necessary to characterize such training project (Taveira; Peralta, 2020, p. 514).

Considering the Pedagogical Course Projects as curricular documents, the analysis sought to identify the key concepts and the internal logic that, in addition to the dimensions previously addressed, allow for a more comprehensive evaluation of the proposals. In this context, it is important to present the general objectives described in each PPC, followed by statements of some specific goals and other relevant dispersions.

In the PPC for the Mathematics Degree at the Porto Velho campus of UNIR, the aim is to train citizens capable of interfering with and transforming the environment in which they live, with social commitment and *insertion in the socio-cultural reality*. It is also hoped that graduates can deepen their knowledge through different forms and approaches, among others, with the general objective of:

qualifying professionals for teaching in Basic Education, preparing graduates to build a critical sense of mathematical knowledge and the exercise of citizenship, constituting the foundations for developing skills and competencies focused on teaching mathematics and preparing them for life (UNIR, 2015, p. 8, emphasis added).

The general objective of the course at the Ji-Paraná campus of UNIR is to “train teachers with knowledge in Mathematics and *Mathematical Education* to work in teaching Mathematics in the final years of Elementary and High Schools, committed to improving the quality of

education” (UNIR, 2017, p. 7, emphasis added), in which they hope to achieve, in the complementarity present in the specific objectives, a teacher training that considers “the social, cultural, economic and political *context of the student’s reality and where the school is inserted*; respect for *cultural plurality*, and *environmental awareness*” (UNIR, 2017, p. 14, emphasis added).

The general objective of the IFRO Vilhena campus course is to “qualify professionals with a degree in Mathematics to work in Basic Education, capable of promoting *theoretical and practical knowledge*, with didactic and pedagogical skills, based on ethical, political, and legal values and principles, through the integration of teaching, research, and extension” (IFRO, 2020, p. 17, emphasis added). In a complementary way, this course specifically aims to develop, in the future teacher, reflection on *pedagogical practice* and its implications in *social reality*, integrating theoretical knowledge with *practice and experience* of internships and complementary activities such as those of the Institutional Teacher Initiation Scholarship Program (PIBID) and the Institutional Pedagogical Residency Program (PRP), with support from the Coordination for the Improvement of Higher Education Personnel (CAPES), in partnership with the government of the state of Rondônia.

The general objective of the Mathematics Degree course at IFRO’s Cacoal campus is to:

graduate Mathematics teachers for elementary and high schools through the acquisition of skills related to the performance of pedagogical practice, preparing them for the *critical* and competent *exercise* of teaching based on aesthetic, political, and ethical values and principles, encouraging them to research and self-improvement *to contribute* to the *improvement of the conditions of Basic Education*, thus contributing to the *development of the citizen* and Brazilian society (IFRO, 2014, p. 19, emphasis added).

The Pedagogical Course Project at IFRO’s Cacoal campus emphasizes an interdisciplinary approach, intending to contribute to constructing a more just society. It also highlights the importance of developing a reflective and investigative posture, capable of “solving real problems of pedagogical practice, considering the learning stages of the students, as well as their socio-cultural characteristics” (IFRO, 2014, p. 20, emphasis added).

In addition to the explicit statements, the documents were analyzed in search of dispersions that could complement the texts’ key concepts and internal logic. These dispersions are summarized in Tables 4, 5, and 6 to expand the understanding of the correlations with the theme of Rural Education. The analysis seeks to identify possible presences and/or absences of

foundations of Rural Education, according to Caldart (2019), in the curricular documents of the Mathematics Degree courses of the institutions investigated, pointing out paths for a more in-depth reflection.

From carefully reading the curricular documents analyzed, words and/or expressions were identified in the texts presented within a context of power relations, knowledge, and discursive practice, challenging a single or centralized interpretation. In this sense, the search is for those that could characterize dispersions by presenting heterogeneity of meanings, emergence of different discursive fields, historical and social contextuality, production/construction of subjectivities, relationship with practices of power and knowledge, legitimization or contestation of meanings, and articulation in different discourses.

Thus, the following words and/or expressions were listed in the analyzed PPC:

- 1) Mathematical Education: present in all documents;
- 2) Rural education/rural student/peasant/agriculture or agricultural or livestock/rural/social movement/Agrarian Reform/EdoC authors: present in some of the documents;
- 3) Ethnomathematics: present in all documents.

These words and expressions configure dispersions because they have multiple meanings that vary according to the discursive contexts, emerge from specific social, political, and historical practices, are crossed by relations of power and knowledge, move between different discursive fields, such as education, mathematics, sociology, politics, and ecology, produce and reproduce subjectivities and social categories, and are constructed and contested over time. Therefore, these words and expressions do not constitute a unified whole but rather parts of a broad and diverse discursive field.

Table 4. Mathematical Education

PPC	Context
UNIR (2015)	Elective subject of History of Mathematical Education; bibliographical references; objective of the elective subject (Ethnomathematics); syllabus of the subject Mathematics Teaching Laboratory; specialization of the department head; implementation of a laboratory in Mathematical Education; SBEM.
UNIR (2017)	Research Group; development of research; in general; specific and TCC objectives; SBEM; in the curricular components: Topics of Mathematical Education; Psychology of Education, General Didactics; Methodology and Practice of Mathematics in Elementary School; in the bibliographical references; in the training of the Campus director.
IFRO (2020)	Subjects Research in Mathematical Education, of the Center for General Education Studies; bibliographical references.
IFRO (2014)	Profile of the graduate who will be able to develop scientific research; bibliographical references.

Source: Prepared by the authors.

Just like Ferreira da Silva and Vizolli (2020, p. 15) who, when analyzing the PPC of the Mathematics Degree course at the State University of Pará (UEPA), highlighted a relevant correlation for understanding the dispersion evoked by the expression Mathematical Education, the curricular documents of the institutions in the state of Rondônia point out that there are “social, cultural, and political implications that allow the teacher trainer to problematize and debate the reality, demands, and challenges of education for the rural population” when teaching Mathematics.

In this context, the dispersion related to Mathematical Education, by encompassing different trends and approaches, opens space to promote a significant interface with Rural Education. Both expressions are complex discursive fields that integrate different knowledge and practices. Mathematical Education, for example, is not just the transmission of mathematical content but a space in which different approaches (socio-cultural, pedagogical, and epistemological) intersect, challenging the idea of a single teaching-learning model. Rural Education, in turn, is permeated by debates on inclusion, specific pedagogical practices, and cultural contexts, reflecting the multiplicity of meanings attributed to education in rural spaces.

Table 5. Rural education/rural student/peasant/agriculture or agricultural or livestock/rural/social movement/Agrarian Reform/EdoC authors

PPC	Context
UNIR (2015)	<i>Agriculture</i> – to highlight the economic vocation of the State.
UNIR (2017)	<i>Agriculture</i> – By highlighting the economic and social reality of the region; expansion of <i>agriculture and livestock farming</i> . <i>Rural Education</i> - in the subject of Education and Inclusion in Mathematics Teaching, by identifying different subjects in the syllabus and program content.
IFRO (2020)	<i>Rural Education</i> – in the syllabus of Public Policies and Legislation in Education; in the legal basis that guides the document regarding professional content, the content of Basic Education, considering the National Curricular Guidelines.
IFRO (2014)	Refers to <i>agricultural</i> production and <i>agriculture and livestock farming</i> producers. <i>Rural</i> – to highlight the location/origin of the students “Initially, about 95% of the students came from <i>rural</i> areas” (p. 11); Technical Course in <i>Agriculture and Livestock Farming</i> Subsequent to High School (p. 12). <i>Agrarian Reform</i> – to indicate that the location of the Institute is “originating from the Integrated Colonization Project Gy Paraná (registration number 5,434), of November 12, 1991, of the National Institute of Colonization and <i>Agrarian Reform</i> ” (p. 11).

Source: Prepared by the authors.

Dispersion refers to the plurality of statements and discursive practices that constitute fields of knowledge, which are not unified by an essence or a fixed internal logic. In this sense, the words and expressions listed in Table 5 can be considered dispersions as they represent discursive categories that vary according to social, historical, and political practices. The “rural

student” and the “peasant” do not have a fixed identity and are constantly (re)defined by discourses that situate them sometimes as subjects of rights, sometimes as political agents, or even as symbols of resistance in contexts of struggle for agrarian reform and specific education. These terms operate in multiple discursive fields, such as economics, politics, ecology, and sociology. Each of them carries specific meanings that depend on the discursive context. For example, “rural” can be seen as a space for agricultural production, a territory of social exclusion, or a place of cultural and community resistance.

The words and expressions in Table 5 refer to discursive practices directly related to political struggle and power relations. “Social movement” and “agrarian reform” do not have univocal meanings, shaped by ideological disputes and political interests. Their statements emerge in academic, legal, and activist discourses, demonstrating their dispersion.

It is also important to note that the authors focusing on Rural Education form a diverse set of statements that do not follow a single theoretical or methodological line. Each author contributes with different perspectives, highlighting the multiplicity of discourses on Rural Education and its associated practices. However, it is important to emphasize that, in the bibliographical references of the four PPCs analyzed, no theoretical references were identified that dialogue directly with the concepts and perspectives of Rural Education.

The set of words and expressions presented in Table 6 illustrates what Molina (2021, p. 4) highlights about Bachelor’s Degrees in Rural Education when she states that these courses “have been able to make effective contributions to the inclusion of a wide diversity of rural subjects in higher education in Brazil.” In addition, the same author emphasizes, based on academic productions, “the quality of the insertion of graduates in public education systems” (idem, p. 5). In this context, LEdoC fulfills its social function by offering communities social subjects that have contributed significantly to education in public schools.

Table 6. Ethnomathematics

PPC	Context
UNIR (2015)	As an optional subject, in the syllabus, program content and bibliographical references.
UNIR (2017)	In the syllabus, program content of the subject, Topics in Mathematical Education, and bibliographical references.
IFRO (2020)	In the bibliographical reference.
IFRO (2014)	Minimum requirements for teaching in the course; in the syllabus of the subject History of Mathematics.

Source: Prepared by the authors.

Ethnomathematics illustrates the idea of dispersion by questioning the universality of mathematics and integrating different cultural practices and local epistemologies. It crosses

discourses of anthropology, education, and mathematics, emphasizing the plurality of ways of thinking and practicing mathematics in diverse cultural contexts.

When seeking the foundations of Rural Education in the Ethnomathematics dispersion, we consider its potential to value rural knowledge and practices, aligning with the possibility of developing the dimensions proposed by D'Ambrósio (2002): political, educational, conceptual, epistemological, historical, and cognitive. According to Ferreira da Silva and Vizolli (2020, p. 13), Ethnomathematics presents itself “as a pedagogical alternative” capable of establishing relationships between mathematics experienced in the contexts of rural communities and school mathematics.

3 CONSIDERATIONS

At this point in the text, it seems appropriate to return to the starting point, to the moment when the reflections for the production of this article began. This review allows us to understand the choices made throughout the process.

All the authors of this study are members of the Interdisciplinary Center for Advanced Research in Curriculum (NIPAC) and the Working Group on Critical Theory and Education in Science and Mathematics (GTCEM), linked to the Graduate Program in Science Education at the School of Sciences of the São Paulo State University (UNESP), Bauru campus, which has been dedicated to curricular studies since 2013. One of the critical stages was developing a doctoral research project focused on curricular studies in Latin America, specifically in Peru, on the initial training of Mathematics teachers and its relationship with Rural Education. After defining the research locus in Peru, it was decided to investigate the Bachelor's Degree in Rural Education in Rolim de Moura, in Rondônia.

The professor at the LEdoC in Rondônia, the first person to speak to the institution, said: “You know that we do not have mathematics as a training area.” However, those expressions were not absorbed or understood at first or even in later moments. Bureaucratic procedures were even carried out to establish a partnership to develop the doctoral project. However, when we expanded our readings, we realized what she had said: We do not license teachers to teach mathematics in rural schools.

This finding led to a central question: if the LEdoC in Rondônia does not offer training in Mathematics for teaching in the final years of Elementary and High Schools in rural schools, *what institution is dedicated to this training?*

Therefore, there is a need to discuss teacher training for rural education, emphasizing how the training curricula of mathematics teachers address – or fail to address – specific requirements of rural education. Many initial and continuing education programs are still based on an urban and generalist curriculum, which limits the ability of future teachers to contextualize mathematics teaching in rural realities (Ribeiro; Castro, 2013).

This curricular discussion is vital so that future teachers are prepared to build more meaningful pedagogical practices that integrate Mathematics teaching into the local context and needs. Training in Rural Education should not be just a specialization but a constitutive part of the undergraduate Mathematics curricula so that a broad, critical education is approved for different educational realities. Thus, a curriculum that promotes socio-cultural integration and the life context of students and recognizes “that in the countryside there are different peoples, with different professional practices and cultural activities” (Silva; Formigosa, 2024, p. 4), which is vital to be discussed in the teacher training path.

Thus, considering these premises, the PPC of the Undergraduate Mathematics courses of two UNIR campuses and two IFRO campuses were analyzed to identify Rural Education foundations’ presence and/or absence in training future Mathematics teachers.

The Rondônia State Development Plan for 2015-2030 highlights the importance of family farming, which is responsible for most of the supply of products for domestic consumption and small agro-industries. The document also presents proposals aimed at Rural Education, linking it to Professional Education and suggesting the creation of a State Rural College, with planning for the physical structure, human resources, and budget for its implementation. It is important to emphasize that all the PPCs analyzed characterize agriculture as one of the main economic potentials of the state.

However, between 2010 and 2022, 354 rural schools were closed, which raises a crucial question: How can a state that is heavily dependent on family farming allow the closure of so many rural education units? What social project is actually being implemented? Questions like these in this text fulfill a dual function. While encouraging the reader to reflect, they open up paths for future, more in-depth investigations into the topic in Rondônia.

The PPCs analyzed show a significant shortage of qualified mathematics teachers who can meet the state’s demands in urban areas and the countryside. This finding reinforces the

need to problematize our research question: How can we train mathematics teachers to work in rural contexts, considering the specificities of each region, territory, and individual who lives in the countryside?

The Vilhena Campus's PPC explicitly mentions "Rural Education," especially when addressing the National Curricular Guidelines for Basic Education, which highlight EdoC as a modality to be served by Basic Education. In addition, the Public Policies and Legislation in Education syllabus emphasizes the right to Rural Education, reinforcing its relevance in the educational context.

In the Ji-Paraná Campus PPC, the term "rural student" appears in the objectives of the subject Education and Inclusion in Mathematics Teaching, which recognizes the importance of promoting specific pedagogical practices focused on diversity, valuing the "aspects inherent to the culture, habits, and specificities of these students" (UNIR, 2017, p. 81).

Furthermore, the Ethnomathematics and Mathematical Education dispersions identified in the PPC present themselves as potential paths to develop and articulate mathematics rooted in diversity and rural contexts, strengthening the dialogue between school knowledge and rural communities' cultural practices.

4 CONCLUSION

When investigating evidence, in terms of absences and presences, of the foundations of Rural Education in the Pedagogical Course Projects of public higher education institutions in Rondônia, there are direct references to this theme in two PPCs analyzed, those of Porto Velho and Ji-Paraná. However, neither these nor the PPCs of Vilhena and Cacoal present theoretical references or explain the concepts that underlie EdoC. The state of Rondônia, in its State Development Plan for 2015-2030, proposes a professionalizing EdoC, with planning for implementing a State Rural College.

Among the dispersions identified, Mathematical Education and Ethnomathematics stand out, which, in the practices and experiences proposed in the PPCs, can constitute a means of developing EdoC based on the contexts and realities of the students. However, for this to happen, it is necessary to investigate the practical application of these approaches, especially from a curricular perspective, since the formative experiences and the identity of the trainers – which also constitute the curriculum – have the potential to generate impacts on the training of

future graduates, particularly for teaching mathematics in the final years of the Elementary and High Schools.

The finding of gaps regarding the explanation of foundations for EdoC in the analyzed PPCs raises two possibilities: a) the LEdoC already existing in the state of Rondônia should be expanded to train teachers for teaching in the area of Mathematics and b) the IES, with Bachelor's Degree courses in Mathematics, review their curricula to include, in the initial training of teachers, principles, foundations and concepts of EdoC, considering the diversity of contexts, especially Rural Education.

Such possibilities can be counter-productive to a societal project anchored in a predatory capitalist social organization that needs to rethink relations of care and production linked to the right to land. In this context, public higher education institutions in Rondônia, with all their potential, can be a vital instrument in the fight for social justice³, by integrating discussions about EdoC in courses that train teachers to teach Mathematics in Elementary and High Schools, contemplating the struggle of collective subjects of rural labor, peasant agriculture (struggle, work, culture) as an identity and class issue, and a conception of education with an emancipatory purpose.

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