

Multigrade: complex scenario, differentiated teaching practices and proactive educational policies social

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Abstract:

This bibliographic article investigates multigrade as a complex educational scenario, critically analyzing differentiated teaching practices and proactive educational policies allowed for its effectiveness. The general objective is to understand the challenges and potentialities of multigrade, identifying innovative pedagogical strategies and appropriate political actions based on the specialized literature. The justification lies in the significant persistence of multigrade education, especially in rural and remote regions, requiring outdated responses that overcome simplistic or deficient views about this school organization. The results indicate that the complexity of the scenario involves structural factors, specific teacher training and clean pedagogical resources; highlight the need for intentionally differentiated, collaborative and flexible pedagogical practices; and we point to the urgency of proactive educational policies that guarantee institutional support, contextualized continuing education, specific teaching materials and recognition of the uniqueness of multigrade, going beyond the mere reproduction of serial models. It is concluded that success in multigrade requires a systemic approach, integrating teaching action and public policies committed to educational equity.

Keywords: Multigrade, Pedagogical Practices, Educational Policies



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Introduction

Multigrade, an educational model that groups students from different grades, ages, and learning levels in a single classroom under the guidance of a single teacher, persists as a structural reality in rural and peripheral contexts in Brazil, challenging homogenizing paradigms of the educational system. Although recognized as a powerful space for innovative pedagogies and valuing heterogeneity, its complexity is accentuated by challenges such as time management, scarcity of didactic resources, and gaps in teacher training, often aggravated by the disconnect between public policies and classroom practices. This article aims to critically analyze these characteristics, with the general objective of investigating multigrade as a complex scenario, differentiated teaching practices and demands for proactive educational policies.

To this end, the following specific objectives are outlined: (1) to define multigrade, highlighting theoretical convergences (such as heterogeneity as a value) and structural dissonances (such as training insufficiencies), proposing evidence-based recommendations for public policies and teacher training; (2) map proactive educational policies (national and local) aimed at multigrade education, through documentary analysis of laws, guidelines and plans, to assess normative coherence with the reality of schools; (3) to characterize the complex scenario of these classrooms, identifying challenges (time management, age diversity, resources) and potentialities (collaborative learning, differentiated pedagogy); (4) analyze differentiated pedagogical strategies (project-based teaching, peer tutoring, curricular flexibility) and their interfaces with contemporary educational theories.

The justification lies in the urgency of overcoming deficient views on multigrade, transforming it into a locus of pedagogical innovation and equity, through policies that transcend mere regulation and education.

Theoretical Foundations of Multigrade

Multigrade, as an educational specific, is anchored in historical-pedagogical principles that date back to the rural schools of the nineteenth century, but its contemporary resignification challenges homogenizing models. According to Hage (2019), this modality transcends the mere exclusive of grades,

configuring itself as a "space of pedagogical sociability that requires epistemological reconfiguration of the teaching-learning process". This perspective is based on the criticism of curricular standardization, since age and cognitive heterogeneity, far from being an obstacle, becomes a dialectical potential when it improves mediated.

This complexity requires, therefore, theoretical references that overcome reductionist views, as pointed out by Silva and Araújo (2020) when they argue that a multi-grade logic operates under Freirean paradigms of dialogicity. The authors argue that "the interaction between different cognitive levels stimulates metacognitive processes that are unfeasible in grade classes", establishing a connection with Vygotsky's theories about the zone of proximal development. However, this potentiality ends up in structural dissonances, especially in initial teacher training, which rarely addresses such specificities.

Teacher training has critical gaps, as demonstrated by Oliveira and Souza (2021) in the study on teaching degree curricula, where only 12% of the syllabuses mentioned strategies for multigrade contexts. This disconnect between theory and practice has direct consequences: teachers resort to intuitive adaptations without methodological support, perpetuating fragmented approaches. Paradoxically, as Santos (2022) observes, this same lack boosts pedagogical creativity when there is institutional support, showing that the absence of guidelines does not imply teaching incapacity.

In this scenario, the valorization of heterogeneity emerges as a guiding axis, in line with the studies of Alves and Cury (2022) on effective multigrade pedagogies. They argue that "age diversity constitutes pedagogical capital when converted into vertical peer tutoring," a principle that echoes Dillenbourg's theory of collaborative learning. Such an approach, however, requires a break with standardized interventions, because as Gatti (2023) warns, instruments that fail to capture multidimensional progress typical of these environments.

Educational policies, in turn, oscillated between rhetorical recognition and effective actions, according to Faria's (2021) documentary analysis of municipal plans. The researcher identifies that "80% of the regulations mention multigrade as a transitory exception, not as a legitimate pedagogical model", reinforcing stigmas that hinder investments in continuing education. This normative gap

contrasts with successful local experiences, where, according to Mendonça (2023), school autonomy allows the development of organic curricula.

The relationship between rural context and multigrade deserves critical analysis, because as Hage (2019) ponders, reducing the focus to geography perpetuates assistentialist views. It is essential to understand it as an "expression of the right to education in diversified territories", which requires policies that transcend the mere distribution of materials. In this aspect, theorists such as Arroyo and Caldart converge when they argue that rural education requires its own epistemologies, not urban replicas.

Teacher mediation in these contexts requires a resignification of the role of the teacher, who, according to Santos and Lima (2024), becomes the "architect of simultaneous individual and collective paths". This metaphor translates the need to master strategies such as curricular differentiation and project pedagogy, anchored in Tomlinson's theories on adaptive teaching. However, this complexity does not dispense with minimum material conditions, such as workload for collaborative planning.

The integration of active methodologies reveals itself as a promising trend, especially teaching through thematic projects investigated by Gatti (2023). Data from his research indicate that interdisciplinary projects increase engagement in multigrade classes by 67%, validating principles of Papert's constructionism. Nevertheless, such success depends on flexible didactic resources, often non-existent in remote schools, generating asymmetries.

Formative assessment is an indispensable pillar, because according to Alves and Cury (2022), instruments such as portfolios and reflective records better capture "invisible learning in multigrade processes". This view is in line with Hoffmann's theories on mediating evaluation, which privilege trajectories over standardized results. The change, however, excludes teacher overload, requiring a structural review of external evaluation systems.

Theories of complexity offer pertinent lenses, as Mendonça (2023) argues when applying Morinian concepts to multiserial. The author proposes that "the multigrade classroom operates as a complex adaptive system, where microinteractions generate unpredictable pedagogical emergencies", requiring the abandonment of linear planning models. This perspective justifies, therefore,

the exclusion of the practices of serial acceleration common in compensatory policies.

The sustainability of the model ultimately depends on synergy between actors, as described by Faria (2021): "proactive policies only flourish when they articulate teacher training, community participation, and specific funding". This ecological triad is Santos' concept of ecology of knowledge, requiring the recognition that vertically imposed solutions have failed in singular contexts.

Normative Overview of Educational Policies

The Brazilian normative framework for multigrade education, although formally recognizing its existence, has structural weaknesses that perpetuate the pedagogical invisibility of this model. According to Alves and Cury (2022), an analysis of the National Education Plan (PNE) reveals that "multigrade is cited only as a circumstantial exception, not as a modality with formative specificities", reflecting a compensatory logic that ignores educational potentialities. This marginalizing approach contrasts, today, with advances in local regulations, as observed in the Municipal Education Plan of Sobral-CE, which integrates guidelines for specific teacher training.

At the state level, significant disparities are identified, as shown by Faria (2021) when comparing legislation from five states: while Minas Gerais establishes tutoring programs for multigrade teachers, other federative units omit concrete references. Such inconsistency has consequently generated "asymmetries in the allocation of resources and technical support", widening regional inequalities. Nevertheless, experiences such as that of Paraná stand out in linking supplementary funding to the implementation of contextualized pedagogical projects.

The analysis of municipal plans shows deep contradictions between discourses and actions, as Ribeiro (2023) points out when examining 30 municipalities: "80% mention multigrade in diagnoses, but only 20% propose measurable goals for its qualification". This operational gap stems, in part, from the disarticulation between education departments and central normative bodies, resulting in generic guidelines that disregard local realities. Paradoxically, small

rural municipalities develop more effective institutional arrangements through intermunicipal consortia.

Public funding is a critical node, because according to Santana (2022), "the cost per student for multigrade schools does not incorporate essential variables such as transportation of materials or extra planning time". This classic underfunding therefore makes it impossible to implement proactive policies, reinforcing cycles of precariousness. On the other hand, initiatives such as the Active School Program, although discontinued, demonstrate that models with dedicated budget allocation increase the availability of adapted teaching resources by 40%.

Teacher training in normative policies reveals a flagrant disconnection, as Oliveira (2021) warns: only 3% of state plans provide for a specific workload for multigrade in continuing education. This normative omission explains, to a large extent, why teachers resort to improvised strategies, without basis in evidence. However, experiences such as the Multigrade Support Network in Bahia illustrate how local agreements can fill gaps through partnerships with universities.

Community participation in normative construction remains incipient, as Martins (2023) notes when analyzing municipal education conferences: "only 12% of the delegates represented multigrade rural communities". This symbolic exclusion compromises the legitimacy of policies, as it ignores essential territorial knowledge. On the other hand, municipalities such as Santarém-PA have implemented permanent forums with teachers and local leaders, generating more adherent regulations.

The external evaluation presents serious conceptual dissonances, because as Hage (2019) criticizes, "standardized performance indicators measure homogeneity, not collaborative processes typical of multigrade classrooms". This inadequacy of the current instruments consequently distorts the results of these schools, justifying centralized disciplines. Alternatives such as the Quality Indicators for Multigrade Education, proposed by Gatti (2023), emerge as counterpoints aligned with differentiated pedagogy.

Technological innovation policies ignore logistical barriers, as Dias (2024) explains: "70% of digital inclusion laws do not provide for offline infrastructure for rural schools without internet". This failure in regulation thus deepens the digital

divide, limiting access to essential pedagogical repositories. However, programs such as the Multimedia Kit for Isolated Schools in Amazonas demonstrate that adapted solutions are viable when there is political will.

The convergence between educational and agrarian policies is neglected, as Mendonça (2023) argues when examining the Land Statute: "multigrade education is dissociated from agrarian reform policies, losing synergies for integrated territorial development". This sectoral fragmentation therefore makes it difficult to create contextualized curricula that articulate school knowledge and community practices. Exceptions such as the Agroecology Study Centers point out paths for normative integration.

National curriculum regulations, especially the BNCC, are perpetuated, because, according to Alves (2022), "they require linear application of competencies incompatible with the simultaneous management of multiple levels". This inadequacy generates variations, teacher overload and pedagogical reductionism. In response, states such as Ceará and Pernambuco developed complementary guidelines that made didactic sequences more flexible without prejudice to essential learning.

Cognitive justice emerges as a neglected principle, as denounced by Santos (2024): "hegemonic curriculum norms disregard non-Western epistemologies present in indigenous and quilombola multigrade contexts". This symbolic violence compromises, therefore, decolonial political-pedagogical projects. Advances such as the Guidelines for Indigenous School Education in Mato Grosso do Sul demonstrate, however, that culturally sensitive regulatory frameworks are possible.

In summary, the construction of proactive policies requires overcoming three critical axes: differentiated financing that contemplates operational complexity; effective participation of local actors in the elaboration of regulations; and contextualized evaluation systems. It is concluded, therefore, that the effectiveness of policies depends less on new laws and more on the coherence between existing devices, allocated resources and territorial realities.

Multigrade Pedagogical Arrangements

Multigrade pedagogical arrangements are configured as strategic responses to the complexity derived from the simultaneous management of multiple levels of learning, requiring creative reinvention of teaching practices. According to Santos and Lima (2024), "the spatial organization in rotational stations allows personalized service while independent groups develop projects", a principle that operates the resignification of heterogeneity as a pedagogical advantage. This approach is therefore based on socio-interactionist theories that value collaboration between age-diverse peers, transforming cognitive differences into opportunities for mutual development.

Curricular differentiation emerges as a structuring axis, requiring the teacher to master strategies such as the learning contracts investigated by Tomlinson (2021) in rural schools. The researcher demonstrated that "individual plans with progressive objectives and selected resources increase student self-efficacy by 68%", thus operationalizing the principles of Gardner's theory of multiple intelligences. However, this methodological sophistication hinders the lack of time for planning, especially in contexts with large classes and precarious infrastructure.

Project pedagogy is consolidated as an effective alternative, as proven by Silva and Araújo (2020) when analyzing 40 schools: "generating themes linked to the local reality integrate up to five curricular levels simultaneously through collaborative research". This strategy consequently enables interdisciplinary treatment while developing investigative skills, echoing the assumptions of Papert's constructionism. It should be noted, however, that its success depends on continuing teacher training focused on the design of multilevel projects.

Vertical tutoring among students is an essential pillar, because as Alves and Cury (2022) observe, "older children consolidate learning by explaining concepts to beginners, while they receive personalized support". This mechanism materializes, in this way, Vygotsky's zone of proximal development, evolving the classroom into a collaborative ecosystem. Paradoxically, standardized evaluation policies discourage such practices by prioritizing individual performance to the detriment of collective processes.

Adapted didactic resources prove to be determinant, especially in contexts with technological restrictions, according to research by Dias (2024). Its data indicate that "pedagogical briefcases with manipulable materials and self-instructional scripts increase student autonomy in 72% of multigrade classes", partially making up for the shortage of teachers. Nevertheless, the production of these materials faces logistical obstacles, as only 15% of the municipalities have specialized technical teams.

The flexible management of school time requires a break with serial models, as Mendonça (2023) argues when he proposes "learning cycles based on competency domains instead of watertight grades". This restructuring thus allows for non-linear advances compatible with different rhythms, based on Perrenoud's theories of competency-based curriculum. Its implementation, nowadays, faces resistance from bureaucratic systems that block standardized serial records.

The integration of community knowledge is shown to be a differential transformer, as demonstrated by Ribeiro and Martins (2023) in quilombola schools: "curricula that articulate traditional and scientific knowledge generate greater engagement and cultural preservation". This approach requires, however, flexibility in national curriculum regulations, which are often rigid regarding mandatory content. Experiences in the semi-arid Northeast illustrate how agricultural calendars can organize didactic sequences.

Formative assessment proves to be more appropriate than conventional models, because according to Gatti (2023), "evolutionary portfolios and narrative records capture invisible multidimensional progress in standardized tests". This perspective is in line with Hoffmann's theories on mediating evaluation, privileging processes over products. The implementation, however, puts an end to the teaching overload and the lack of systematized protocols.

Educational technologies, when contextualized, enhance the arrangements, as Oliveira (2021) investigates when implementing offline repositories in Pará: "curated digital collections allow differentiated access to learning objects without dependence on the internet". This thus enables personalization at scale, but challenges in teacher training for critical use.

Initiatives such as the International Bank of Educational Objects offer resources, but without curation for multigrade.

In-service teacher training needs to overcome palestristic models, as Santos (2024) warns, defending "communities of practice where teachers can find solutions to real challenges". This proposal is based on Wenger's theory of situated learning, generating contextualized pedagogical knowledge. Municipalities such as Arapiraca-AL prove its effectiveness, with a 30% reduction in dropout after the implementation of collaborative groups.

Innovative institutional sets, such as platform schools, emerge as a response to fragmentation, as described by Faria (2021): "rurais centers with itinerant teachers and shared resources optimize expertise and infrastructure". This model operates, therefore, in the logic of learning networks, allowing synergy between geographically dispersed units. Its sustainability, however, depends on specific funding and continued government support.

In summary, the effectiveness of multigrade pedagogical arrangements is based on the triad: organizational flexibility supported by policies, teacher training centered on active methodologies and contextualized didactic resources. It is concluded that such arrangements represent not only survival strategies, but laboratories of educational innovation with the potential to inspire systemic transformations.

METHODOLOGY

This research was based exclusively on secondary data, through a documentary survey in SciELO and Google Scholar digital databases. The selection criteria prioritized original articles published between 2018 and 2024, explicitly containing "multiserial" or correlates in the titles or abstracts. Subsequently, a filter by accessibility via DOI was applied, ensuring full traceability. Initially, 78 studies were identified, of which 20 met the thematic and methodological criteria previously established for the composition of the *corpus*.

The organization of the material followed chronotopic principles, grouping publications by thematic axes: educational policies, pedagogical practices and operational complexity. Concomitantly, an analytical matrix was created with Preliminary categories derived from the objectives: standardization versus reality

(Alves; Cury, 2022), didactic innovation (Dias, 2024) and social participation (Martins, 2023). Each document was coded by floating reading followed by vertical analysis, recording contradictions and convergences between studies.

The qualitative analysis was operationalized through the content analysis technique according to Bardin, developing in three interconnected phases: pre-analysis, material exploration and inferential treatment. In the exploratory phase, significant excerpts on teaching challenges were segmented (Gatti; Barretto, 2023) and institutional arrangements (Faria, 2021). From this emerged empirical categories such as "normative gap" and "spontaneous pedagogical creativity", refined by triangulation with theoretical references on rural education (Hage, 2019).

Analytical validation occurred through recursive checking between deductive and emerging categories, contrasting findings such as precarious financing (Santana, 2022) with local solutions (Ribeiro, 2023). NVivo® software was used for thematic frequency mapping, with a predominance of criticism of centralized policies (Oliveira, 2021) and counterproposals for curricular flexibility (Santos; Lima, 2024). Consequently, interpretative syntheses were constructed about structural tensions in the investigated phenomenon.

FINAL CONSIDERATIONS

The analysis showed that multigrade constitutes a unique pedagogical model, characterized by the simultaneous management of multiple levels of learning in the same space-time. Convergence in the discourses regarding heterogeneity is recognized as a potentiating element through collaborative interactions between students of different ages. However, significant dissonances persist regarding the normative recognition of this modality, often treated as a compensatory exception rather than an intentional alternative. This conceptual gap is directly reflected in the precariousness of the training structures offered to teachers.

In this context, the mapping of educational policies revealed a worrying fragmentation between normative devices and the real needs of schools. National and state plans present superficial mentions of multi-grade, devoid of clear operational mechanisms for implementation. In addition, a mismatch was

identified between centralized guidelines and local contexts, where improvised solutions try to make up for the absence of institutional support. The lack of specific funding for teaching materials and continuing education is a recurrent obstacle to the effectiveness of the proposed actions.

As for the operational scenario, multidimensional challenges were found that demand expanded pedagogical skills. Time management and curricular organization impose complex demands, aggravated by the scarcity of adapted resources and inadequate infrastructure. Nevertheless, distinctive pedagogical potentials have emerged, such as collaborative learning through vertical peer tutoring. Such dynamics favor socio-emotional development and student autonomy, transforming age diversity into an educational advantage when properly mediated.

The teaching strategies analyzed demonstrate creativity in the construction of contextualized responses, highlighting teaching by interdisciplinary projects and curricular flexibility. These approaches, aligned with socio-constructivist references, allow for the integration of community knowledge and the personalization of paths. However, fragility was observed in the theoretical systematization of these practices, often supported more by individual effort than by structuring policies. The disconnect between local innovations and central regulations limits their diffusion and sustainability.

Therefore, an integrated review of regulatory frameworks is recommended with the active participation of school communities in policy formulation. It is urgent to institute differentiated funding that contemplates specific operational complexity and to create teacher training programs based on active multilevel methodologies. At the same time, it is proposed to systematize successful practices in flexible didactic protocols, capable of guiding teachers without stifling creative responses. Thus, it will be possible to transform structural challenges into laboratories of educational innovation.

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