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Systematic Review

Challenges and Opportunities of Multi-Grade Teaching: A Systematic Review of Recent International Studies

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Abstract

Multigrade classrooms represent a widely extended educational modality in rural contexts and territories with low demographic density. This organizational model, in which a single teacher serves students from different levels in the same space, poses particular challenges but also significant pedagogical opportunities. In this systemic literature review, a total of 40 international studies were analyzed according to the PRISMA guidelines, published between 2019 and 2024 in databases such as Scopus and ERIC. The objective of this analysis is to identify the main organizational and methodological approaches, as well as the strengths and weaknesses, associated with teaching in multigrade contexts. This systematic review has been prospectively registered in the Open Science Framework (OSF) under registration number: 64rsu. A qualitative thematic analysis was employed to organize the results into five categories: organizational models, pedagogical practices, teacher training, impact on learning, and school-community links. The findings underscore the efficacy of this model in promoting educational inclusion, cooperative learning, and curricular contextualization. Nevertheless, they also underscore the necessity for specific teacher training and support policies. This review offers a comparative and critical perspective that has the potential to inform the development of more effective pedagogical and training strategies in a range of educational settings.

Keywords: multigrade classrooms; active methodologies; systematic review; teacher training; educational inclusion

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1. Introduction

In recent years, there has been an increasing commitment to innovative methodologies in the education system, many of which are supported by technologies (**?**). The aim of this commitment is to transform teaching–learning processes and to promote educational inclusion. This exploration of novel pedagogical practices has brought to the fore alternative models that, though not novel, have historically remained in the background. In light of the challenges posed by demographic and geographical constraints in rural contexts, multigrade classrooms have become a prevalent educational strategy (**?**). This pedagogical approach, characterized by the utilization of mixed-age groups within a single classroom, emerges as a practical solution to the limitations imposed by conventional classroom organization based on levels of proficiency or age.

The impetus for understanding the functionality of these classrooms has been mounting, not only due to their structural presence in numerous rural schools, but also due

to their pedagogical potential. International organizations such as the United Nations Educational, Scientific, and Cultural Organization (UNESCO) have promoted research on the effectiveness of such measures, highlighting their role in guaranteeing the right to education in isolated communities, provided that adequate conditions such as teacher training, adapted resources, and institutional support are in place (**?**). Consequently, the multigrade classroom is not merely a response to an organizational need; it can also be regarded as an educational model in its own right (**?**).

The concept of a multigrade classroom refers to a space where a single teacher simultaneously teaches students from different educational levels. Whilst this configuration is most often associated with rural contexts exhibiting low enrolment (**?**), it has also been observed in schools that adopt alternative pedagogical approaches. The effective implementation of this approach necessitates the employment of specific methodologies that are capable of addressing the challenges posed by heterogeneity, while concurrently leveraging the opportunities that it presents. These methodologies include collaborative learning, student autonomy, and educational personalization (**?**; **?**; **?**).

A significant corpus of research has been dedicated to the investigation of multigrade classrooms as a pragmatic response to systemic issues in a variety of countries, including Brazil, India, Canada, Chile, Australia, and South Africa. The findings of this study demonstrate a wide range of organizational models, encompassing single-teacher unitary schools and larger groupings characterized by a cyclical or partial multigrade structure. In all cases, multigrade classrooms appear as a flexible and contextual response to the local educational reality (**?**; **?**; **?**; **?**; **?**; **?**).

Beyond their function as an administrative rationalization measure or as a solution to low enrolment, multigrade classrooms have been revalued for their pedagogical potential. A range of comparative studies have been conducted that have highlighted various factors which have been shown to have a positive impact on the quality of education. These factors include peer learning, personalized attention, student autonomy, the contextualization of the curriculum, and the strengthening of the relationship between school, community, and family. These characteristics have been identified by international organizations such as the Organization for Economic Co-operation and Development (OECD) and UNESCO as fundamental to the promotion of equitable education in diverse territories (**?**; **?**).

However, structural challenges persist that limit the development of its full potential: the scarcity of human and material resources, limited specific teacher training for multigrade environments, and the work overload involved in simultaneously serving students with different levels of curricular competence (**?**; **?**; **?**). The integration of educational technologies, unequal access to basic infrastructure, and the lack of sustained public policies for this type of education remain critical issues in many countries (**?**).

A significant lacuna in the extant literature pertains to the paucity of a systematic organization of existing knowledge. While there is a plethora of case studies and qualitative research focusing on local or national experiences, there is a paucity of broad comparative analyses that integrate different geographical, cultural, and socio-economic realities. Moreover, numerous training systems continue to neglect the provision of targeted preparation for educators to function effectively in multigrade classrooms. Instead, this essential training is often relegated to experiential learning or left to the discretion of individual teachers in the field.

Nonetheless, multigrade classrooms offer a plethora of educational potential, including reduced ratios, individualized attention, close links with families, and an environment that fosters peer learning (**?**). The heterogeneity and flexibility inherent in these methodologies are conducive to inclusive and contextualized education, wherein active and cooperative methodologies assume particularly salient roles (**?**).

Research on multigrade classrooms was deployed on three geographical fronts—the United States, Australia, and several developing countries—and evolved from simple comparisons of achievement to complex analyses of pedagogy and school organization (**?**; **?**; **?**). Early studies, conducted primarily in rural American schools, contrasted the achievement of multigrade students with that of their single-grade peers and concluded that differences in achievement were statistically nil or minimal (**?**; **?**; **?**). At the same time, qualitative and ethnographic research began to document the daily life of multigrade teaching, revealing tensions in the simultaneous management of several curricula, the scarcity of materials, and the absence of specific teacher training (**?**). Despite these difficulties, stable socio-affective benefits were reported, such as inter-age cooperation and leadership development among older students (**?**). In Latin America, evaluations of Colombia's Escuela Nueva program demonstrated that, when provided with specialized teaching resources and community support, multigrade classrooms could improve both learning and family participation (**?**). This success prompted the World Bank-sponsored comparative studies that positioned multigrade as a cost-effective strategy for expanding rural coverage (**?**). Conceptually, the decade saw the emergence of the distinction between "multigrade" classrooms—grouped by administrative necessity—and "multi-age" classrooms—grouped by pedagogical intent—which shifted the debate towards constructivist and ecological perspectives that situated learning within broader community frameworks (**?**).

From this standpoint, the aim of this overarching systemic literature review is to analyze the characteristics, challenges, and opportunities presented by multigrade classrooms in international contexts, differentiating them from other models such as the traditional classroom or multilevel teaching, in order to identify good practices and guide future lines of educational action.

2. Methodology

The present research is framed within the framework of a documentary review, with secondary research aimed at compiling, organizing, and critically analyzing the scientific production available on multigrade classrooms at an international level. This methodological approach facilitates the identification of common patterns, theoretical approaches, knowledge gaps, and relevant methodological proposals in different educational contexts.

A systematic review strategy was adopted in accordance with the recommendations of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement, adapted to the field of educational sciences (**?**). The methodology employed is designed to ensure the process is both transparent and reproducible, whilst also being meticulous in its approach.

2.1. Research Questions

The research questions that have been formulated in this study are as follows:

- What are the principal organizational characteristics of multigrade classrooms, as evidenced by the studies that have been analyzed?
- The following question is posed for consideration: what pedagogical methodologies are applied in these contexts, and what are the results of their application?
- The present study seeks to explore the way teacher training is approached in relation to working in multigrade classrooms.
- The following question is posed for discussion: what challenges and opportunities have been identified in the implementation of this educational model?
- The following question is posed for discussion: what recommendations, if any, can be drawn from the extant literature regarding the enhancement of the quality of education in multigrade classrooms?

2.2. Search Strategy

The search for information was conducted in academic databases recognized for their relevance in the educational and social sciences fields. Specifically, the databases consulted were Scopus and ERIC.

Scopus is a multidisciplinary database that facilitates access to academic literature in fields such as technology, medicine, social sciences, and the arts and humanities. ERIC (Education Resources Information Center) is a specialized database in the field of education and is widely used for research in teaching and learning.

The search terms employed included:

("multigrade" AND "teaching") OR ("multigrade" AND "classes"),

as well as additional variations such as "multi-grade", "multiage", "pedagogy", and educational level terms like "early childhood education" and "primary education". Boolean operators (AND, OR) were used to combine descriptors and enhance the relevance and breadth of results (Table **??**).

Table 1. Database-specific search strategies used in the review.

Database	Search Terms	Filters Applied	Time Range
ERIC	("multigrade" AND "teaching") OR ("multigrade" AND "classes")	Open Access, Full Text	2019–2024
Scopus	("multigrade" AND "teaching") OR ("multigrade" AND "classes"); alternative terms: "multi-grade", "multiage", "pedagogy", "early childhood education", "primary education"	Document type: articles; Access type: open	2019–2024

Search terms were adapted to the syntax of each database. Only open-access documents with full-text availability were included, with no language restrictions. The time range was limited to publications from 2019 to 2024, in order to capture the most recent developments in the field.

Duplicate records were removed, and the remaining articles were screened in two phases: title/abstract and full text. The screening process was carried out independently by two reviewers following the PRISMA 2020 guidelines. Disagreements between the two primary reviewers during the screening and selection process were resolved through discussion. When consensus could not be reached, the final decision was made by a third author.

2.3. Inclusion and Exclusion Criteria

To ensure the rigor of the study, specific inclusion and exclusion criteria were established to guide the selection of articles. These criteria are consistent with the objectives outlined in the review and help researchers maintain transparency throughout the process.

Inclusion criteria

- Articles and book chapters
- Age limit of the last 5 years (2019–2024)
- Articles in any language
- Open-access scientific publications
- Studies focused on multigrade classrooms in rural and urban contexts, whose sample is framed in early childhood education, with emphasis on their organizational, methodological, formative, or pedagogical characteristics

Exclusion criteria

- Articles without full access to the text
- Duplicated publications or with little methodological rigor
- Articles whose samples were not in Infant/Primary Education
- Articles prior to 2019

2.4. Article Selection Process

The selection process of the studies included in this systematic literature review was carried out in different phases, following the guidelines of the PRISMA model (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), with the aim of guaranteeing the transparency and rigor of the procedure.

The preliminary investigation was conducted in two academic databases of established repute in the field of education: Scopus and ERIC. Combinations of key terms such as "multigrade classrooms", "multi-age teaching" and "rural education" were used. The initial search yielded a total of 273 documents: The document is listed in the Scopus database with a citation of 163 and in the ERIC database with a citation of 110.

Subsequently, a temporal inclusion criterion was applied, restricting the results to publications between 2019 and 2024, which reduced the total number to 68 articles (47 in Scopus and 21 in ERIC). In the subsequent stage of the process, a total of 16 duplicate documents were eliminated using the Zotero bibliographic manager. This process left a sample of 52 unique articles.

The selection process was carried out in three stages. In the first stage, titles and abstracts were screened to determine the relevance of each study based on the educational context and target population. Studies that clearly did not address multigrade teaching in early childhood or primary education were excluded. In the second stage, full-text articles were reviewed in detail. At this point, studies were excluded if they were not open access or if they did not provide sufficient methodological information for analysis. As a result, 12 articles were excluded during this phase (Table **??**). In the final stage, the remaining studies were assessed for inclusion through consensus between two reviewers. In cases of disagreement, a third author made the final decision. The following procedure was undertaken in order to verify that the selected studies met the defined inclusion criteria. This procedure entailed the conducting of a full-text review of the studies. The final selection of forty documents has been made for inclusion in the analysis corpus of this review.

Table 2. Summary of documents excluded in the second analysis.

Study (Autor, Year)	Inclusion Status	Observations
? (**?**)	Excluded (reason 1)	No access to full text
? (**?**)	Excluded (reason 1)	No access to full text
? (**?**)	Excluded (reason 1)	No access to full text
? (**?**)	Excluded (reason 2)	Not in line with the objective of the study

Table 2. *Cont.*

Study (Autor, Year)	Inclusion Status	Observations
? (?)	Excluded (reason 1)	No access to full text
? (?)	Excluded (reason 1)	No access to full text
? (?)	Excluded (reason 2)	Not in line with the objective of the study
? (?)	Excluded (reason 1)	No access to full text
? (?)	Excluded (reason 1)	No access to full text
? (?)	Excluded (reason 1)	No access to full text
? (?)	Excluded (reason 1)	No access to full text
? (?)	Excluded (reason 1)	No access to full text

The detailed flow of this process is presented in the PRISMA diagram included in this section (Figure **??**).

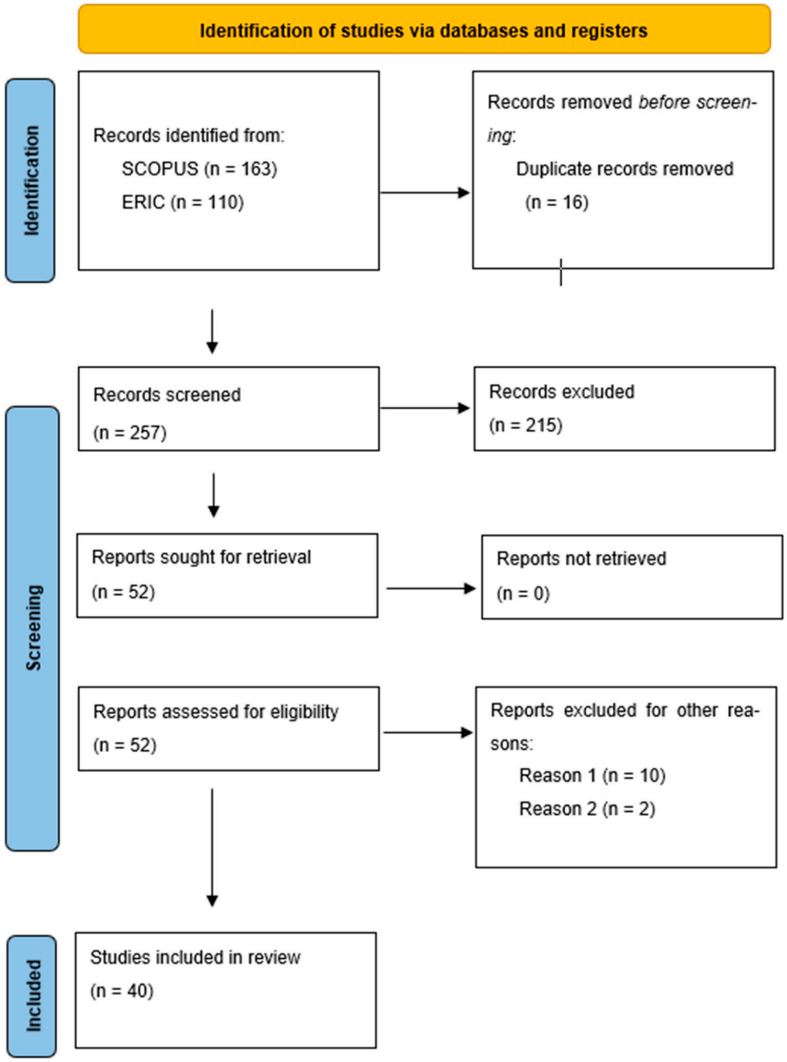


Figure 1. Flowchart of the relevant article selection procedure.

2.5. Analysis of the Information

For the analysis of the 40 selected papers, a data extraction template was designed to systematically collect the most relevant information from each study. The fields considered included: authors, year of publication, country or region of study, objectives, methodological design, population of interest, main findings, conclusions, and keywords.

Once the information had been extracted, a qualitative thematic analysis was carried out to identify recurring patterns and common conceptual categories in the literature reviewed. This method allowed for the identification of emerging categories, patterns, and recurrent approaches in relation to multigrade classrooms. The review has been carried out following the process of analysis detailed below:

1. Comprehensive Reading: A thorough reading of the selected articles was carried out independently by each researcher but following the same criteria. Discrepancies were resolved at a review meeting of the categories that emerged.
2. Grouping into Thematic Categories: organization of the initial codes into broader and more coherent thematic categories based on the recurrence of themes and identified interconnections.
3. Open Coding: identification and coding of relevant text fragments.
4. Interpretation and Synthesis: done for each of the categories that emerged and the meaning of what appeared in the text.

This analysis allowed the content to be grouped into five main categories:

- Organizational models and school management: structures, groupings, and dynamics specific to multigrade classrooms.
- Teaching practices and active methods: teaching strategies used, with an emphasis on cooperative and personalized learning.
- Teacher training and professional development: initial and in-service training for teachers in multigrade contexts.
- Impact on learning and educational inclusion: observed impact on academic achievement, equity, and diversity.
- School-community relations and the territorial dimension: links between the sociocultural environment and the functioning of education.

This thematic approach allowed for the development of a critical and comparative view of multigrade classrooms at the international level, highlighting both the challenges and opportunities identified in different contexts.

3. Results

Throughout this systematic review, the concept of multigrade classrooms has been explored in depth, differentiating it from other educational models and addressing the questions originally posed: What is the educational community's understanding of multigrade classrooms? What are the main organizational characteristics of multigrade classrooms according to the studies analyzed? What teaching methods are used in these contexts and with what results? How is teacher training addressed in relation to working in multigrade classrooms? What are the challenges in and opportunities of implementing this pedagogical model? What recommendations can be drawn from the literature to improve the quality of teaching in multigrade classrooms?

Based on an analysis of 40 international studies, the findings are grouped into five broad categories: organizational models; teaching methods; teacher training and professional development; educational strengths; challenges to the model; and school–community links (Table **??**).

Table 3. Summary table of the thematic analysis.

Category	General Description	Examples or Key Findings
Organizational models	Structural configuration of the multigrade classroom according to context, enrolment, and available resources.	Single classrooms in the Rural Grouping Center (CRA) and combined classrooms in the incomplete CEIP.
Pedagogical methodologies	Strategies used to cater for the heterogeneity of the student body.	Cooperative learning, project-based learning, jump-jump, and Escuela Nueva (New School) model.
Teacher training	Level of initial and ongoing preparation of teachers to deal with the multigrade model.	Lack of specific training and need for adapted plans.
Strengths of the model	Pedagogical, social, and organizational opportunities of the multigrade classroom.	Individualized attention, autonomy, peer learning, and flexibility.
Challenges and barriers	Constraints to effective implementation of the model.	Teaching overload, shortage of resources, and professional isolation.

3.1. Organizational Models and School Management

Multigrade classrooms are defined as educational spaces in which the same teacher teaches students of different educational levels within a single group (**?**; **?**). This configuration is primarily observed in rural or hard-to-reach areas, as a response to low population density and the impracticability of maintaining one classroom per level (**?**).

With regard to the geographical provenance of the studies, the majority are situated within the European Union (23), with a notable representation of research from Spain, Portugal, Italy, and Finland. Fifteen studies were identified in the Americas, principally from the Southern Cone (Brazil, Chile, and Argentina), and one additional study focused on the context of the United States. Two studies from China are also included, providing a perspective from Asia.

At the organizational level, the studies analyzed identify two main models:

- The educational environment is characterized by the presence of single classrooms, wherein a single teacher is responsible for instructing students of varying levels. Such practices are particularly prevalent in small schools, especially in rural areas (**?**).
- The concept of combined classrooms is evident in schools that feature multigrade sections, which are integrated into larger educational centers. This phenomenon is exemplified by the case of incomplete Infant and Primary Education Centers (CEIP) in Spain, where the operation of certain levels is consolidated due to the progressive decline in enrolment (**?**).

These configurations respond not only to demographic criteria, but also to institutional sustainability strategies linked to the optimization of human and material resources.

3.2. Pedagogical Practices and Active Methodologies

Multigrade classrooms necessitate methodological approaches that are characterized by flexibility, creativity, and adaptability in order to respond to the heterogeneity of the student body. In contradistinction to the single-grade model, in which content and strategies are tailored to a single level, multigrade classrooms require integrated planning that allows teachers to work with students of different ages, developmental levels, and learning rhythms.

Inspired by theories such as those of Dewey, Freinet, and Petersen, many of the practices observed in the literature are based on cooperative and collaborative learning, project-based work, multilevel teaching, and peer tutoring (**?**; **?**).

It is evident that cooperative and collaborative learning is one of the most recurrent and effective methodological approaches in this educational model. The studies reviewed emphasize that group work is fundamental to the effective functioning of multigrade classrooms, as it allows older students to support the younger ones, generating benefits

for both. This interaction fosters individual responsibility, strengthens commitment to the common task, and creates a learning environment where 'everyone learns from everyone' (**?**; **?**; **?**, **?**).

Moreover, the concept of collaborative work is not confined to students; it also encompasses co-teaching, which can be defined as a strategy in which multiple professionals (e.g., the generalist teacher or tutor and the special education teacher) collaborate in the planning and delivery of instruction to address the diverse needs of each student (multi-level teaching). These practices have been shown to contribute to shared and more contextualized pedagogical planning, thereby strengthening the culture of collaboration within the educational establishment (**?**).

Conversely, specific methodological strategies have been adapted to this diversity, including project work and common activities that have been adapted to different levels of difficulty (**?**).

In many cases, materials for differentiated instruction are developed by the teachers themselves (see **?**; **?**).

As **?** (**?**) have demonstrated, specific techniques have been employed, including the 'jump-jump' strategy, in which the teacher alternates between groups while the rest of the class works independently.

It is evident that the utilization of learning corners and activities centered on play, music, drama, or hands-on work is a pivotal aspect of the educational paradigm (**?**).

It is imperative to make references to pedagogical models that have been proven to be effective, such as Escuela Nueva (Colombia) and the LEPO (Learning Environment, Process and Outcome) framework. These models advocate active, interdisciplinary, and contextualized learning (**?**).

These strategies are developed within a framework that is connected to the reality of the environment, taking advantage of local knowledge, rural identities, and community dynamics to generate meaningful learning that is committed to the context.

However, as demonstrated by several studies, traditional practices that reproduce segmentation by levels still coexist, thus limiting the full use of the multigrade approach. These practices have been observed to occur in contexts characterized by limited resources or where the model is adopted out of necessity, without the benefit of clear pedagogical guidance (**?**; **?**; **?**).

A comprehensive review of the extant literature indicates that the methodological richness of multigrade classrooms is characterized by their capacity to integrate diversity, foster collaboration between students and teachers, and establish learning communities that transcend the individualistic logic of the traditional model (**?**).

3.3. Teacher Training and Professional Development

A significant finding emphasized in numerous studies is the absence of dedicated training for educators working in multigrade classrooms, both within initial training programs and in continuing professional development (**?**; **?**; **?**; **?**; **?**; **?**; **?**; **?**; **?**).

The majority of teachers do not receive training in methodology, organization, or pedagogy that is tailored to these contexts, which engenders feelings of insecurity and professional overload. A paucity of university programs incorporate internships in rural schools or multigrade units, and these are frequently elective or marginal (**?**; **?**).

Teachers emphasize the methodological intricacy inherent in multigrade classrooms, underscoring the necessity to acquire competencies in diversified planning, differentiated assessment, effective time management, and the promotion of student autonomy (**?**). Consequently, a substantial number of studies have advocated for the formulation of bespoke initial

and ongoing training curricula for rural and multigrade settings, encompassing intercultural, inclusive, and collaborative methodologies (**?**; **?**, **?**).

3.4. Educational Strengths of the Multigrade Model

Notwithstanding the numerous challenges confronting them, multigrade classrooms have been demonstrated to exhibit a set of strengths that have been extensively emphasized in the extant educational literature, particularly within the context of rural settings. As posited by **?** (**?**); **?** (**?**); and **?** (**?**), the advantages of this model are manifold. In addition to providing pedagogical value, the model is positioned as a viable and inclusive alternative in diverse contexts.

Individualized and personalized attention: The provision of individualized and personalized attention is of paramount importance. A key benefit of multigrade classrooms is the ability to provide individualized attention to each student, facilitated by the reduced student-to-teacher ratio. This context enables educators to acquire profound insights into their students' characteristics, needs, and interests, thereby facilitating the development of teaching strategies that are more aligned with their learning rhythms. Furthermore, it enables constant monitoring of the educational process, promoting comprehensive attention at both the academic and socio-emotional levels (**?**; **?**).

Peer learning and empowerment: The presence of students from diverse age groups and educational backgrounds within the classroom environment fosters an environment conducive to peer learning. In the educational environment, under scrutiny, older students are assigned to the roles of tutors and role models, while their younger counterparts are expected to assimilate knowledge through observation, active participation, and the solicitation of assistance when required. This dynamic fosters personal autonomy, a sense of responsibility and cooperation, and facilitates the consolidation of learning through explanation and interaction. This has been demonstrated to foster a culture of mutual support and shared responsibility in the educational process (**?**; **?**).

Curricular and methodological flexibility: The multigrade organization has been demonstrated to engender greater flexibility in educational planning, thus allowing for the adaptation of timings, content, and methodological strategies to the diversity of the group (**?**). The curriculum is reconceptualized as an open and contextualized tool, capable of integrating different levels of complexity into the same activity and working across different subjects based on projects, common themes, or situations in the environment. This flexibility is of particular value in rural contexts, where local conditions necessitate dynamic and contextualized pedagogical approaches (**?**; **?**).

Positive coexistence environment: Multigrade classrooms are characterized by a school climate based on proximity and constant interaction between students and teachers. The cultivation of such intimacy fosters the establishment of relationships characterized by trust, mutual respect, solidarity, and cooperation. Intergenerational coexistence, far from being an obstacle, becomes an educational value, promoting empathy, patience, and understanding among peers of different ages. Collectively, these elements contribute to the creation of a more humane, secure, and emotionally fulfilling environment (**?**; **?**).

The process of contextualization in the context of learning: The correlation between the educational facility and its surroundings is especially apparent in multigrade classrooms, where learning is firmly embedded within the rural milieu, encompassing its distinctive values, knowledge, and customs. Teachers utilize local resources as a point of departure for developing key skills, thereby promoting meaningful and functional learning. Moreover, knowledge of the environment, oral communication, traditions, community work, and the natural environment are valued as active components of the curriculum (**?**; **?**).

Teacher professional development: The implementation of multigrade classrooms in educational settings has been demonstrated to facilitate teachers' professional growth. This is achieved by placing greater demands on pedagogical competencies, including planning, creativity, adaptability, and decision-making skills. Concomitant management of multiple educational levels has been demonstrated to challenge conventional structures, compelling teachers to seek innovative solutions, engage in reflection on their practice, and cultivate collaborative skills. This experience, although challenging, is perceived by many teachers as an opportunity to broaden their methodological repertoire and enrich their professional role (**?**; **?**).

3.5. Challenges for Students, Teachers and the System

In addition to their strengths, multigrade classrooms face significant structural, methodological, and contextual challenges that hinder their full development and, in many cases, prevent them from realizing their pedagogical potential. These challenges are especially pronounced in rural contexts and necessitate a coordinated response from various levels of the education system.

Teacher overload: A significant challenge encountered by teachers operating within multigrade classrooms pertains to the necessity of concurrently planning for multiple educational levels. This demands an augmented degree of dedication and preparation on the part of the teaching faculty. This planning encompasses the adaptation of content and methodologies to suit various age groups, as well as the effective management of time to ensure the provision of adequate attention to each group without compromising the needs of the others. The multifarious roles undertaken by pedagogues, including the pedagogical coordinator, tutor, administrative manager, and community liaison, serve only to compound the workload, with the potential to engender stress and professional burnout (**?**; **?**; **?**).

Complexity in assessment: The assessment of learning in multigrade contexts presents an additional challenge, due to the necessity of tailoring the assessment to the diversity of the group, taking into account different performance levels, and using differentiated criteria. Nevertheless, the absence of specific tools and reference frameworks for this type of classroom environment serves to complicate the process. The necessity to monitor individual progress, maintain curricular coherence, and record progress at multiple levels simultaneously requires specialized skills that are not always sufficiently developed among teachers. *Lack of teaching resources and specialized support*: A significant number of teachers are obliged to engage in multigrade teaching, often utilizing materials that are inadequately adapted or entirely ill-suited to this particular context. It is a common occurrence that teachers are compelled to design their own teaching resources, a process which invariably demands a greater investment of effort. Furthermore, specialist staff such as guidance counselors, support teachers, and education technicians are often limited or non-existent in rural schools, making it difficult to cater adequately for diversity in the classroom (**?**; **?**, **?**; **?**).

Professional and institutional isolation: In particular, within rural contexts, educators frequently encounter profound professional isolation, often operating in isolation or without the support of consistent teaching teams. The absence of collaboration networks, technical advice, and institutional support has a deleterious effect on opportunities for training, reflection, and continuous improvement. This situation can lead to feelings of abandonment or demotivation, especially among novices in the teaching profession or those with no previous experience of working in such an environment (**?**; **?**; **?**; **?**).

Lack of specific training: The majority of initial teacher training programs are designed from a single-subject and urban perspective, without considering the particularities of

rural schools or multigrade teaching. The disconnection between the pedagogical training received in university and the practical demands of the profession has been identified as a significant contributing factor to the challenges faced by teachers in multigrade classrooms. This disconnection has been shown to result in a deficiency in the necessary tools and skills that teachers require to effectively address the methodological and organizational demands of teaching in multigrade environments. Conversely, continuing education has been found to rarely offer specialized content (**?**; **?**; **?**). This finding serves to emphasize the necessity of designing contextualized and sustainable training plans.

Rural environment conditions: Multigrade classrooms are frequently situated in rural areas, which are often confronted with a number of structural issues. These include depopulation, demographic aging, migration to cities, inadequate basic infrastructure, and limited digital connectivity. These conditions exert a direct influence on the functioning of the school, thereby limiting its capacity for innovation and improvement. Furthermore, these factors influence teachers' perceptions of permanence within these contexts, resulting in high rates of turnover that erode the stability of educational initiatives (**?**; **?**; **?**).

Negative perceptions of the model: In certain contexts, multigrade classrooms are regarded as a provisional or 'second-rate' solution rather than a legitimate pedagogical alternative. This perception exerts an influence on teacher motivation and the extent to which the model is recognized within the social context. The absence of public policies that underscore its strengths and inclusive potential contributes to perpetuating this misperception. In reality, it has the potential to serve as a privileged space for the development of innovative, contextualized, and student-centered educational practices (**?**; **?**; **?**; **?**).

In order to surmount these obstacles, there is a necessity for comprehensive strategies that encompass the improvement of teachers' working conditions, the strengthening of initial and continuing training, and the development of educational policies that recognize the pedagogical value of multigrade classrooms.

3.6. School-Community Relationship and Territorial Dimension

In the specialist literature on multigrade classrooms, considerable importance is attributed to the close link between the school and its community, particularly in rural contexts. The bond between the school and its local community is manifested in two ways. Firstly, there is a practical collaboration between families and the school. Secondly, there is a cultural, emotional, and social synergy that engenders a sense of the school as a fundamental pillar of the local area.

The active involvement of families in the educational process is a constant feature in the studies reviewed. Research conducted by **?** (**?**) and **?** (**?**) demonstrate that in multigrade rural schools, families are not merely participants in school meetings or activities but are also actively involved in the teaching–learning process. They accompany, support, and collaborate closely and frequently with teachers. This phenomenon stands in contrast to the lower levels of participation typically observed in urban settings. It is interpreted as a significant opportunity to promote educational co-responsibility and the development of shared values.

In addition, teachers in multigrade schools are regarded as role models within the community. As **?** (**?**) have observed, those engaged in teaching in rural contexts fulfill not only a pedagogical role, but also social, emotional, and local leadership roles. The continuous presence of these actors, their active involvement in community life, and their role as mediators between the school and the environment all serve to underscore their central role in the construction of the rural social fabric (**?**; **?**). This status has been shown to increase both the responsibilities and the capacity of these individuals to generate impacts beyond the confines of the classroom (**?**).

Furthermore, the curriculum is enriched through the inclusion of elements from the surrounding environment, resulting in a contextualized, accessible, and culturally meaningful education. In this regard, **?** (**?**) highlights how local knowledge, community values, agricultural practices, oral traditions, and the social realities of the territory are incorporated into the educational experience, thereby strengthening students' sense of belonging and connecting school learning with their everyday reality (**?**). This practice contributes to redefining the role of the school as a space for building shared knowledge, collective identity, and cultural roots.

The outcome of this interaction between school and community is greater social cohesion, the strengthening of the local cultural identity, and a high degree of emotional involvement of students with their school (**?**). The multigrade school, it could be argued, is not merely a place of instruction, but rather a focal point for local development. It has the capacity to invigorate community processes, preserve the social capital of the territory, and function as a meeting place for different generations.

The relational approach, supported by family involvement, teacher commitment, and a curriculum open to local realities, reinforces the sustainability of the multigrade model as a form of school organization with profound educational, social, and territorial values.

4. Discussion

The results obtained in this systematic literature review demonstrate that multigrade classrooms are an educational modality characterized by dual dimensions: organizational and pedagogical. While these spaces have historically been regarded as a response to structural factors such as low population density or territorial dispersion, the extant literature indicates that they also embody a transformative capacity, capable of fostering inclusive, contextualized, and student-centered pedagogical approaches.

From an organizational perspective, a wide variety of configurations exist, ranging from single classrooms to multigrade sections within larger schools, with the objective of adapting to local realities. This diversity necessitates enhanced institutional and curricular flexibility, as well as teacher planning tailored to complex contexts, as **?** (**?**) also observe in UNESCO reports.

With regard to the implementation of teaching methodologies, studies have confirmed that multigrade classrooms are conducive to the implementation of active, cooperative, and participatory strategies. These pedagogical approaches are aligned with established theoretical frameworks, including those developed by Dewey and Freinet, as well as contemporary models such as project-based learning, multilevel teaching, and learning community models. However, the effective application of these methodologies is contingent on teacher training and support, as well as the institutional support available (**?**; **?**; **?**; **?**; **?**; **?**, **?**), a recurring finding in previous research such as that of **?** (**?**) and **?** (**?**).

The strengths identified include personalized attention, cooperation among students, learning autonomy, rich intergenerational relationships, and connection with the rural environment. The integration of these elements serves to enhance the educational experience, thereby facilitating the creation of more humane, meaningful, and equitable learning spaces. The interaction between different levels and ages has been demonstrated to facilitate the circulation of knowledge, foster empathy, and strengthen the sense of school community.

Nevertheless, the analysis also reveals persistent structural challenges that limit the full development of these classrooms. These include teacher workload, absence of specific resources, lack of adapted materials, absence of specialized training in initial training programs, and professional isolation in rural contexts. These vulnerabilities have been previously identified by scholars such as **?** (**?**) and persist two decades later, underscoring a discrepancy

between pedagogical theory and practical implementation, as demonstrated in the works of **?** (**?**), **?** (**?**), **?** (**?**), **?** (**?**), **?** (**?**), **?** (**?**), and **?** (**?**).

The review also confirms that teachers' perceptions of the multigrade model are influenced by the institutional support they receive. While certain pedagogues may view this as a valuable opportunity, others may regard it as an obligation imposed upon them without adequate preparation or resources. This diversity of experiences serves to reinforce the notion that multigrade classrooms are not inherently beneficial or detrimental in nature, but rather, the quality of their implementation and the context in which they operate is pivotal in determining their efficacy.

A notable aspect in the literature is the community and territorial dimension of multigrade classrooms. The school thus becomes a central hub of local life, with educational work being intertwined with the culture, economy, and social relations of the surrounding area. This finding is consistent with the vision of rural schools as key actors in sustainable development and underscores the need for comprehensive pedagogical approaches that value the territory as an educational space.

The results of this review indicate that multigrade classrooms, when operated in accordance with minimum standards, have the capacity to deliver an education of a high standard that is tailored to the needs of diverse student populations and contribute to the reduction in regional inequalities (**?**). However, in order to achieve this, greater investment is required in teacher training, educational resources, and specific policies that recognize the particularities of this model.

This research contributes to the existing literature by providing a systematic overview of the international evidence and offering a common analytical framework for understanding it. However, there are still areas that have been little explored and require further attention, such as the longitudinal analysis of learning in multigrade classrooms, the impact of ICTs in these contexts, and the comparative evaluation of specific teacher training models.

5. Conclusions

This systematic literature review has provided a more profound understanding of multigrade classrooms as an educational modality present in multiple school systems internationally. A comprehensive analysis of 40 studies published between 2019 and 2024 has been conducted to identify the main characteristics, methodologies, strengths, and challenges associated with this organizational model. The analysis has placed particular emphasis on its development in rural contexts and in situations of low population density.

It is evident that multigrade classrooms are not merely a rudimentary organizational response to inherent structural constraints; rather, they are evolving as environments that possess considerable pedagogical potential. These spaces have the capacity to foster inclusivity, promote cooperative learning, provide individualized attention, and facilitate curriculum contextualization. The close link between school and community, as well as the capacity to adapt educational processes to the sociocultural characteristics of the environment, serve to reinforce these strengths.

Nevertheless, its full development is impeded by considerable structural and training challenges, including teacher workload, absence of specific training, paucity of adapted teaching resources, and professional isolation in rural areas. In order to surmount these obstacles, it is imperative to devise bespoke educational policies that encompass initial and ongoing training oriented towards multigrade contexts, the provision of adequate resources, institutional support, and the acknowledgement of the pedagogical value of these experiences.

In summary, multigrade classrooms should no longer be regarded as a short-term measure, but rather as a valid, adaptable, and pioneering educational alternative with the capacity to respond effectively and equitably to the varied educational requirements of the 21st century.

5.1. Limitations of the Study

The initial observation to be made pertains to the period that has been selected for the review (2019–2024). While this range ensures the timeliness and relevance of the studies analyzed, it is possible that relevant previous research providing a historical or evolutionary perspective on the multigrade model has been excluded.

Secondly, the methodological heterogeneity of the studies included represents a challenge when establishing direct comparisons between results. While this diversity enriches the overall picture, it complicates the systematization of homogeneous evidence and the subsequent drawing of unified conclusions. On the other hand, it is also worth noting that the lack of representation or studies in some countries may be another aspect limiting research. It is clear that multigrade classrooms do not develop in the same way in one country as in another.

To conclude, there is an absence of longitudinal and quantitative studies that evaluate the long-term impact of multigrade classrooms on both students' academic performance and their social and emotional development. This discrepancy hinders the capacity to establish definitive causal relationships between the organizational model and the educational outcomes.

5.2. Future Lines of Research

Within the scope of this research, the development of comparative studies between countries is recommended, with the aim of identifying effective practices that can be transferred and adapted to diverse educational contexts. This international approach would promote a broader and more diverse understanding of how multigrade classrooms function in different sociocultural contexts.

Furthermore, longitudinal research is considered necessary in order to analyze the impact of multigrade classrooms on the academic and personal development of students. Such research would make it possible to assess their long-term effectiveness and influence on the continuous learning process.

Another priority area of work is teacher training. It is imperative to examine how the reality of multigrade classrooms is addressed in initial and continuing training programs, and to propose training strategies that provide teachers with specific methodological and organizational tools for these contexts.

The consolidation of a robust theoretical and practical foundation pertaining to multigrade classrooms is poised to contribute to enhancing the quality of education in these contexts. Furthermore, this consolidation is expected to raise awareness and dignify a modality that, when implemented with the requisite support, signifies a genuine opportunity to rethink schools based on the values of equity, participation, diversity, and pedagogical innovation.

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