
A SYSTEMATIC REVIEW OF MULTIGRADE TEACHING PRACTICES AND POLICY RESPONSES IN SOUTH ASIA

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ABSTRACT

Multigrade classrooms are widespread in rural areas of South Asian countries and are commonly employed where teacher shortages or low student enrollment necessitate this arrangement. Despite their prevalence, evidence related to multigrade pedagogy - particularly place-based pedagogy - remains fragmented across a range of policy documents, donor project reports and academic studies. Following PRISMA 2020, the systematic review synthesizes existing evidence from 88 studies in the 2000–2025 bracket, including peer-reviewed articles, dissertations, and reports from international organizations. The review highlights existing practices related to multigrade curriculum development and teaching practices, teacher professional development and policy responses in South Asian countries. Recurrent challenges including lack of policy implementation, curriculum misalignment, teacher preparedness, weak assessment frameworks, resource constraints and teacher workload have been identified. Simultaneously, the review synthesizes evidence related to student adaptability and community-based practices that have proved successful in the multigrade sphere. The review concludes that multigrade education can play a transformative role in achieving SDG 4, by providing equitable access to quality education, provided that a significant

investment is made in curriculum adaptation, teacher training and systemic support via policy implementation. Furthermore, with the advancements in the field of technology, low-tech-first supports can be effectively utilized to reduce teacher workload and provide improved accessibility.

Keywords: *Inclusion, multigrade education, curriculum adaptation, professional development, place-based pedagogy, policy, low-tech-first.*

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1. INTRODUCTION

Multigrade teaching has been a part of the education phenomenon for centuries. Monograde classrooms became the norm during the mid-nineteenth century, where students in the same age range group were segregated according to the requirements of the curriculum. However, multigrade classrooms – where students of different ages are placed under the guidance of a single teacher – have persisted for ages. In the current era, this format is used to target the rural landscape, particularly in the Global South. According to this format, a single teacher instructs two or more grades simultaneously. These classrooms mainly address issues related to low student enrollment, resource constraints, geographic isolation and lack of qualified and trained teachers (Little, 2001; Pridmore, 2007). Even though multigrade classrooms offer a pragmatic solution to these issues, this format is under-supported. In its current form it ignores contextual realities, resulting in low learning outcomes and frustration in teachers. In South Asian countries

-particularly Pakistan, India, Nepal and Bangladesh - multigrade education has long been considered a realistic solution to address issues related to accessibility and inclusivity in rural and remote areas. Despite the fact that this format of educational delivery has prevailed for decades in these areas, there is insufficient research that addresses pedagogical challenges in these regions. Hence, suggested policy interventions are also limited or are fragmented across donor-funded project reports, government policies and small-scale academic studies (Rao & Sun, 2015).

Having direct implications for the Sustainable Development Goal (SDG4), the need for addressing existing gaps to improve the implementation of multigrade education - particularly in South Asian countries - becomes essential in providing accessible and equitable education for all (UNESCO, 2023). Furthermore, the aftermath of COVID-19 pandemic as well as repeated destruction due to natural disasters, has increased learning deficits across these areas.

According to the Annual Status of Education Report (ASER), published in 2023, only 43% of grade 5 students in India could read a grade 2 text, revealing deficiencies in basic literacy and numeracy (ASER Centre, 2023). Furthermore, an estimated 77% of the children in Pakistan are unable to read and comprehend a simple text by the time they are 10 years old (World Bank, 2022). These findings highlight the importance of multigrade interventions and places an emphasis on applying appropriate pedagogical strategies.

Challenges in multigrade teaching at a global level and the role of educational resources for this purpose have also been

examined (Said et al., 2024; de Oliveira & de Castro, 2024). These findings, however, do not examine context-specific issues related to South Asian countries. Studies involving the implementation of multigrade teaching in India provide valuable insights related to the multigrade phenomenon (Shrivastava and Jain, 2025). However, the study does not specifically take into account the implications and implementation of place-based pedagogy. Furthermore, there is little evidence of systematic research on the potential of place-based pedagogy and its implications on curriculum adaptation, professional development and policy responses to multigrade classrooms in South Asia – thereby, presenting a crucial research gap, which this systematic review aims to address.

Place-based learning or place-based education (PBE) refers to an instructional approach focused on the exploration of the environment. It emphasizes developing an understanding of how the environment interacts with the content in the curriculum so as to include students' lived experiences in the learning process (Smith et.al 2023). Place-based learning is diverse – it incorporates multiple aspects such as critical pedagogy, community-based education, and multicultural education (Gruenewald 2003). Place-based learning highlights the potential of connecting learning to the local environment, culture, and community resources. It is, therefore, instrumental in connecting learning to the local environment, culture, and community resources (Gruenewald, 2003). In South Asian countries, where community participation can play an instrumental role, in managing resource constraints, this form of pedagogy has been rarely explored to its full potential – particularly in the context of multigrade education.

By examining findings related to multigrade education, within the South Asian context, this systematic review analyzes curriculum adaptation, policy responses and professional development, with particular references to the integration and implementation of place-based pedagogy. The aim is to contribute to the achievement of accessible and inclusive education as determined by Sustainable Development Goal 4 (SDG4).

Based on previous discussion, the aims of the paper may be defined as follows:

- Examine systematic review framework that consolidates the body of evidence on multigrade schooling from 2000 to 2025.
- Examine the main challenges and barriers present in multigrade implementation.
- Assess the effectiveness of policy and program designs on multigrade practices.
- Identify studies that specifically refer to the broader place-based practices and summarize their linkages to multigrade practice.
- Map reported technology supports utilized for improvement in different facets multigrade education.

The research questions formulated for this study are as follows:

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- Based on the reviewed studies, what are the main features of multigrade classrooms in South Asian countries?
 - What challenges and barriers have been reported?
 - What impact have policy and program design initiatives had on existing multigrade models in South Asian countries?
 - Which multigrade initiatives, incorporating place-based education or community involvement have been successful?
 - What evidence exists of successful technology usage in low-resource multigrade settings?

2. REVIEW OF LITERATURE

The available literature on multigrade classrooms asserts the notion that multigrade classrooms – with their challenges and prospects – continue to be a popular choice for addressing multiple issues related to educational delivery in South Asian countries. To develop appropriate solutions to deal with the existing and expected challenges, it is crucial to understand these multifaceted challenges and opportunities. This paper, will therefore, first synthesize the available literature to provide deeper insights into this concept.

Multigrade classrooms are recognized internationally as an organizational necessity for addressing educational delivery in low-enrollment contexts. Furthermore, they also serve as a platform for pedagogical innovations, potentially leading to

opportunities for contextualized curriculum adaptations and consequential changes in teaching methodologies (Little, 2001). South Asian countries depend on the multigrade format – particularly in making quality education accessible in remote and underserved regions. Despite the prevalence of this mode, the systematic evidence which currently exists, remains dispersed (Little, 2006; Shareefa, 2020).

Currently, the multigrade classroom exists in two modes – single-unit classrooms and combined classrooms. Single-unit classrooms, combining students of different age groups, and led by a single teacher are dominant in the South Asian context. The main purpose of this model is to target teacher shortage and other resource constraints (Nawab & Baig, 2011; Blum, 2009). The combined model, on the other hand, is prevalent in high-income and middle-income contexts, particularly in Scandinavian countries, Canada and Australia. The important point to be noted here is that within these contexts, the combined model is adopted as a choice, particularly by parents desiring diverse curriculum choices and instructional materials (Ares-Ferreirós et al., 2025). This indicates that multigrade classrooms, if managed properly, do possess the potential for redefining the South Asian contextual implementation, despite the fact that currently the single-unit model is being utilized for accessibility.

From a pedagogical perspective, it has been highlighted by numerous studies that modern day education requires a more progressive approach – preferably based on experiential learning, and active and cooperative learning (Ares-Ferreirós et al., 2025). As opposed to the teacher-centered approaches that

were more popular in the industrial era, the industrial revolution 4.0 requires more critical thinkers. To achieve this, the modern-day approach emphasizes a student-centered approach, involving collaboration, communication and problem – solving, thereby, in theory, conveniently moving away from the monograde approach and towards a multigrade or mixed-classroom approach. It, can then be deciphered, that direct instruction alone is insufficient, if a progressive approach is to be implemented.

Literature reveals that Colombia's Escuela Nueva model, developed in the mid-1970s, is one of the most globally popular and validated frameworks. It seeks to re-imagine single-room classrooms in rural and remote areas. It equips the multigrade classroom with structured, self-paced learning guides – thereby, providing flexibility of curricula. Moreover, this model focuses on utilizing rural and remote area schools as centers of community participation, hence resulting in better learning outcomes (Colbert & Arboleda, 2016). An overall improvement in learning outcomes, civic values and retention rates has been reported by research as a result of implementation of this model. This framework has been adapted for use in more than 20 countries across Latin America, Africa, and Asia (McEwan, 1998).

However, in South Asian countries, the outdated, teacher-centered model remains the norm in most multigrade classrooms. It relies on rote-based methods to cover a rigid curriculum, leading to standardized examinations at the end of the year. Furthermore, this becomes a challenge for teachers as well, as they lack the specialized training required for targeting

students in a multigrade classroom, all the time following the same rigid curriculum (Nawab & Baig, 2011). Teachers have minimum to no experience with differentiated instruction to deal with these situations, so they tend to cover the gap with passive learning, hence resulting in increasing achievement gaps.

Literature reveals that despite these challenges, in some countries, like the Maldives, initiatives have been taken to pilot the application of classroom-based differentiated instruction strategies (Shareefa, 2020). The results demonstrate improvement in learning outcomes and engagement. These results demonstrate potential for context-based, place-based pedagogies in South Asia, provided that measures are taken to comprehensively tackle large-scale adoption due to limitations at the systemic levels. In conclusion, the South Asian context is ripe for innovation - there are opportunities for research and innovation in the areas of contextualized teacher training, curriculum adaptation and resource development.

Specifically, from a teacher education perspective, lack of specific training for multigrade classrooms, results in insufficient lesson preparation. Moreover, as multigrade pedagogy is rarely addressed, teachers who are usually not even trained in basic pedagogies are left on their own to improvise (Ferreirós et al., 2025).

Research shows that in South Asian countries, generally in rural areas, there exist strong school-community relationships. Place-based pedagogy, can therefore, be explored to its full potential by adapting the curriculum to the local context and environment (Gruenewald, 2003; Azraai, 2019).

In conclusion, the literature reviewed, highlights the need for systematic longitudinal research, utilization of educational technology and comparative studies focusing on pedagogical and organizational models at the multigrade front (Ares-Ferreirós et al., 2025). This systematic review, therefore, serves to highlight the need for systematic inclusion of multigrade pedagogy in teacher education programs, adaptation of the national curricula to suit the multigrade context and the exploration of place-based pedagogy to contextualize teaching and learning to achieve SDG4.

3. RESEARCH METHODOLOGY

The present research is framed as a systematic review. It employs secondary research with the aim to collect, compile, organize and critically evaluate the available body of existing scientific and policy-related literature on multigrade education, particularly within the South Asian context. This systematic approach simplifies the identification of common themes, existing theoretical frameworks, knowledge gaps, regional and contextual challenges, pedagogical innovations and interventions employed in multigrade classrooms in South Asia.

To ensure a proper implementation of a systematic review methodology, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines were adapted for use in the field of educational sciences. The review includes articles from peer-reviewed journals, dissertations, policy papers and grey literature from UNICEF, World Bank and UNESCO. This particular approach to article selection was taken since these international organizations have played an important role in funding, documenting educational initiatives

related to schooling and teacher development in rural and remote areas in the South Asian region.

The methodology employed for this review is designed to be transparent and reproducible. Each stage of the review process has been meticulously documented to ensure reliability.

3.1 Search Strategy

A search for relevant literature was conducted in academic databases that are significantly recognized in the fields of education and social sciences. These databases included Scopus, ERIC, and ProQuest Dissertations & Theses. The review also included literature from international organizations such as UNICEF, UNESCO and the World Bank. This approach was used to ensure that peer-review and policy evidence (including program evaluations and donor reports) were thoroughly covered. Grey literature was considered essential for this study because a great deal of evidence related to multigrade education in South Asia is covered in these reports.

The search terms employed included: ("multigrade" OR "multi-grade" OR "multilevel" OR "multiage") AND ("teaching" OR "pedagogy" OR "classroom" OR "instruction") AND ("South Asia" OR "India" OR "Pakistan" OR "Nepal" OR "Bangladesh" OR "Bhutan" OR "Sri Lanka" OR "Maldives"). The Boolean operators (AND, OR) were utilized to combine descriptors and improve the breadth of results.

Similar educational terms such as "primary education", "elementary education", and "early childhood education", were a part of the search strategy. Additional variations to search strategy. Additional variations to search strategy included descriptors related to place-based pedagogy.

The search strings used were: ("place-based" OR "community-based" OR "contextualized" OR "local curriculum" OR "culturally responsive") AND ("pedagogy" OR "teaching" OR "education") AND ("South Asia" OR "India" OR "Pakistan" OR "Nepal" OR "Bangladesh" OR "Bhutan" OR "Sri Lanka" OR "Maldives"). These search strings incorporated regional identifiers to determine the existence of contextually relevant pedagogical models.

Table 1. Database-Specific Search Strategies Used in the Review

Database	Search Terms	Filters Applied	Time Range
ERIC	("multigrade" OR "multi-grade" OR "multilevel") AND ("teaching" OR "pedagogy" OR "classroom") AND ("South Asia" OR "India" OR "Pakistan" OR "Nepal" OR "Bangladesh" OR "Bhutan" OR "Sri Lanka" OR "Maldives")	Peer-reviewed; Full text.	2000-2025
Scopus	("multigrade" OR "multiage") AND ("education" OR "pedagogy") AND ("South Asia" OR individual country names)	Articles	2000-2025
ProQuest Dissertations & Theses	("multigrade" OR "multi-grade") AND ("primary education" OR "teacher training") AND (South Asia or country-specific terms)	Dissertations; Theses	2000-2025
Grey Literature (UNICEF, UNESCO, World Bank)	"multigrade teaching" OR "multi-grade pedagogy" + (South Asia / country name)	Reports; Policy papers; Project evaluations	2000-2025

Source: The author's own work.

The search strings and terms were modified to suit the syntax of the different databases. The time range selected for the purpose of this review was from 2000-2025, to comprehensively capture the possible adaptations in trends over the past two decades.

Following the PRISMA guidelines 2020, duplicates were removed and the remaining articles were screened. In the first phase, the title/abstract were screened and in the second phase the full text was screened. As per the guidelines, the screening process was carried out independently by two reviewers. Disagreements were addressed through discussion. The final decision, in case of non-resolution, was made by a third reviewer. Publications successfully passing this screening process were then subjected to a full-text review.

3.2 Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were developed to guide the selection of suitable articles. It was ensured that the criteria align with the purpose and scope of the systematic review and ensure a transparent and consistent process.

3.2.1 Inclusion Criteria

- Peer-reviewed journal articles, book chapters, and doctoral dissertations.
- Documents with relevant empirical evidence such as policy documents, and program evaluations from considered international organizations.
- Studies published between in a 25-year window (2000–2025).
- Studies available in English or studies with an English translation.

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- Studies focusing on multigrade education in South Asian countries.
 - Studies examining organizational models, pedagogical processes, curriculum implementation and innovation, teacher professional development, policy responses, or assessment frameworks in multigrade classrooms.
 - Studies that include reference to place-based pedagogy, community-based education, or culturally responsive approaches within or outside multigrade settings. These studies were tagged during the final review and did not determine eligibility. These were used to support a subset analysis in the Results sections.

3.2.2 Exclusion Criteria

- Articles without full access to the text.
- Duplicate publications or studies with limited methodological rigor.
- Studies outside the South Asian region.
- Publications prior to 2000.
- Policy documents without empirical evidence

3.3 Note on Preliminary Literature

Along with the studies formally included for literature synthesis in the systematic review, it should be noted that several

foundational publications have also been cited to provide context, explain key concepts, and to frame the research problem. It should be noted that these publications were not part of the final sample for literature synthesis, as they either preceded the review window or were basically utilized to understand the theoretical aspects of math anxiety or technology use in education in general.

3.4 Article Selection Process

Following the guidelines of the PRISMA model (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), the article selection process was carried in three different phases. The objective here was to guarantee transparency by showcasing methodological rigor.

The preliminary search was conducted across Scopus, ERIC, ProQuest Dissertations & Theses and relevant articles from UNESCO, UNICEF and the World Bank. In the process, search strings and keywords such as “multigrade classrooms”, “multi-age teaching”, “community-based education”, “place-based education”, “rural education” and “South Asia” were used. This preliminary investigation resulted in a total of 1,184 records, including 612 from Scopus, 318 from ERIC, 104 from ProQuest and 150 from policy and donor-related articles.

Next, Zotero bibliographic manager was used to eliminate duplicates. This resulted in a removal of 193 records. After that, 432 non-scholarly entries were further excluded during source-type filtering. Overall, the process resulted in a sample of 559 unique academic and grey literature articles.

The selection process consisted of three distinct stages. In the first stage, the titles and abstracts of the 559 records were screened to determine the relevance of selected literature. The educational context and target population served as points of reference for relevance at this point. Literature that did not particularly address multigrade education in South Asia, or did not address pedagogical models, curriculum adaptation and/or implementation, and teacher professional development were excluded. The exclusion resulted in the elimination of 374 articles. In the second stage, a full-text review was conducted for the remaining 185 documents. During this stage, articles were excluded if they were not accessible, were published in a language other than English – without a translation available. Articles were excluded if they lacked sufficient methodological information for an appropriate analysis. Furthermore, descriptive policy documents without empirical evidence, editorials and opinion pieces were also excluded, thereby resulting in the elimination of 97 more documents. Table 2 systematically demonstrates the exclusion process.

In the third stage, two independent reviewers reviewed the remaining 88 studies. A third reviewer was included in cases of conflict.

After following this stringent procedure, the final sample included 88 articles and documents, with 59 articles from peer-reviewed articles, 9 from dissertations and 20 from policy documents of international organizations. These articles formed the final body of the systematic review.

Table 2. Summary of Documents Excluded in the Second Phase of Analysis

Reason for Exclusion	Number of Studies
Not focused on South Asia	34
Focused on secondary/tertiary education only	18
Not multigrade-related (general rural education only)	15
Theoretical/commentary pieces without empirical data	12
No access to full text	9
Insufficient methodological detail	9
Total Excluded	97

Source: The authors' own work.

The PRISMA diagram demonstrates the flow of this process.

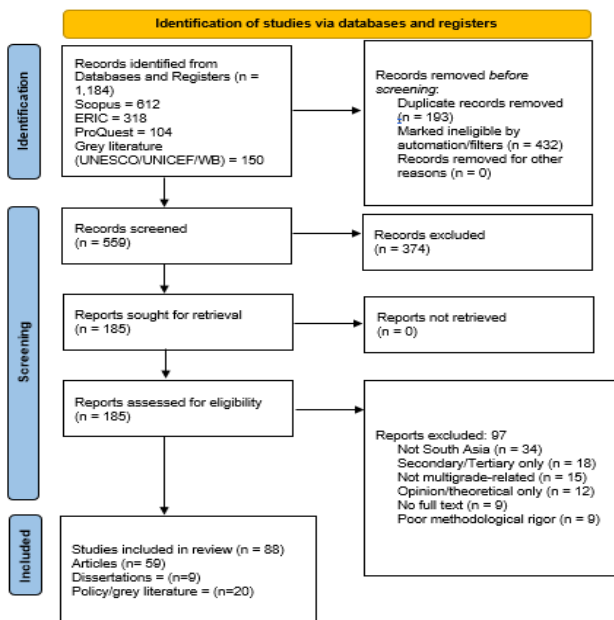


Figure 1. PRISMA Flow Diagram for the Article Selection Process

3.5 Analysis of the Information

To conduct an analysis of the 88 selected studies, a data extraction template was created. The template assisted with systematically gathering and arranging the most relevant information from each source. The key features of the template included author(s), year of publication, country/region, research objectives, methodology, sample size/population, educational level, pedagogical model, key findings and policy implications (if any). In this way, consistency and comprehensiveness were

ensured whilst documenting the characteristics of each study and a structured database was created, making it easier to compare different articles. It also helped in the identification of themes and existing gap in the multigrade teaching landscape in South Asia. This standardization of extraction and analysis also helped ensure transparency and reproducibility of the systematic review.

After extraction of relevant information, a qualitative thematic analysis was conducted. As the study designs were heterogenous, a meta-analysis was impractical in this case, hence the thematic analysis approach was adopted. This assisted with integrating findings from different genres of evidence, hence aiding in identification of patterns, trends and possible contradictions.

The analysis consisted of four main stages. In the first stage, each article was comprehensively studied by reviewers and the previously mentioned coding criteria was followed. The articles were independently reviewed, and in cases of conflict, a consensus was reached through discussion. Then, the relevant sections of the selected text were identified and coded based on their areas of focus. Next, codes were arranged in broader categories, depending upon their interconnectedness, relevance and recurrence to the main review questions. In the last stage, these categories were comprehensively analyzed to identify assumptions, frameworks and implications for policy and practice.

As a result, five major thematic categories emerged, which were used to address the research objectives. These categories are

classified in Table 3. The findings were organized against research objectives 1, 2 and 3. See *Table 4*.

Table 3. Identified Themes and Categories Covered

Theme	Categories
Organizational Models	structures, class groupings, and management practices specific to multigrade classrooms in South Asia
Teaching Practices	strategies used by teachers, with a focus on active learning pedagogical models, particularly, place-based pedagogy
Professional Development	initial preparation, in-service training, and policy-level efforts to equip teachers for multigrade contexts
Impact on Learning and Educational Inclusion	observed effects on student learning outcomes, equity, and the inclusion of marginalized groups
School - Community Relations	the role of families, local communities, and cultural contexts in shaping multigrade education, particularly in rural and geographically isolated regions

Source: The authors' own work.

Adopting a thematic approach for the analysis assisted with developing a comparative understanding of the multigrade education landscape in South Asia. It also assisted with the identification of existing gaps- particularly the ones related to the application and integration of a context-based pedagogical model. Structuring the evidence into clear categories helped build a foundation for future educational reforms, taking into consideration current practices.

4. RESULTS

For this systematic review, the concept of multigrade education, its implications, and the concept of community-based learning and place-based pedagogy was comprehensively explored. This was done to address the questions previously posed: What is the main organizational feature of multigrade classrooms in South Asian countries? What pedagogical innovations have been reported, and how effective have they

been in achieving the set objectives? What gaps and possibilities have been noted in the South Asian context and in regard to multigrade teaching vis-a-vis curriculum alignment, assessment systems, and resource provision? What is suggested in the literature regarding the policy changes to be made to improve the quality, inclusivity, and sustainability of education in multigrade classrooms in South Asia? Based on a comprehensive analysis of 88 pieces of literature, the findings are grouped into seven broad categories: pedagogy and curriculum, inclusivity and learning outcomes, professional development, systemic support, organizational models, challenges and barriers and a seventh category consisting of studies that had a broad focus, and hence did not fit into any of the previously mentioned categories (Table 4).

Table 4. Summary of the Thematic Analysis

Thematic Category	Number of Studies	General Description	Key Findings	Link to Research Objective
Pedagogy and Curriculum	26	Curriculum adaptation for multigrade experiences, strategies for handling learner heterogeneity, pedagogical practices prevalent in classrooms, digital innovations	MGML-style multilevel teaching; differentiated instruction in small-island contexts; digitally supported one-room school pilots; local curriculum frameworks enabling community links.	Objectives 1,2,3 and place-based pedagogy
Access and Equity	20	Effects of multigrade on learning, access, inclusion, and equity for marginalized groups and female students.	CBE in Afghanistan improved girls' access; BRAC schools in Bangladesh expanded equity; ASER Pakistan (2023) showed persistent learning gaps.	Objectives 1,2,3 and place-based pedagogy
Professional Development	19	The suitability and level of initial and ongoing training for teachers to manage multigrade classrooms effectively.	Bhutan's CPD framework; Maldives teacher learning; Maths PD in Sindh; Neglect of multigrade in teacher education.	Objectives 1,2,3
Systemic Support	13	Policy frameworks, governance mechanisms, donor funding and systemic responses to multigrade teaching.	India's NCERT <i>The Primary Teacher</i> (2016) recognized multigrade; Sri Lanka's rationalization risks equity; UNICEF Pakistan on emergencies; UNICEF Afghanistan on policy gaps.	Objectives 1,3

Organizational Models	8	Structural configurations of multigrade classrooms according to teacher availability, enrollment data and availability of resources.	Afghanistan's village-based schools BRAC one-teacher schools in Bangladesh; Maldives' small-island schools.	Objectives 1,3
Challenges and Barriers	2	Constraints to effective implementation of multigrade teaching.	Teacher stress and improvisation in Pakistan; weak policy frameworks.	Objective 2

Source: The authors' own work.

A detailed analysis of each theme, after mapping them with the research objectives is discussed in the subsections that follow.

4.1 Evidence on Multigrade in South Asia (2000-2025)

An exhaustive literature review notes the existence of multigrade pedagogical practice through Petersen and Dewey's lens in the South Asia context. Firstly, it was noted that Multigrade Multilevel pedagogy (MGML) in India's Rishi Valley is described with students using self-paced material, flexible student grouping and peer tutoring (Singh, 2024; UNICEF India, 2016). Secondly, in Maldivian small school settings, there is differentiated instruction using station-rotation for small group work (Shareefa, 2020). Thirdly, Nepal provides an example of a place-based curriculum. The pedagogy is situated within curriculum that aims to modify pedagogy for the purposes of conviviality, and situate students' local knowledge and tasks, or curriculum items, in the home language, as also suggested in the Local Curriculum Framework (CDC, 2019). Furthermore, various one-teacher formats are common across the multigrade continuum in Bangladesh, including multigrade groupings that are intended to achieve accelerated learning outcomes (EQUIP2, 2006; BRAC Institute, 2022).

The literature reflects favorable results in learning contexts where the pedagogical model is supported by relevant curriculum materials and mentoring supports. When these aspects are missing, teachers relied upon a system that draws upon their own improvisation, perpetuating students' passive learning, the grade level rotation of students, and little or no differentiation (Jamaldini et al., 2022; Nawab & Baig, 2011).

Literature highlights that even though multigrade education tends to improve access and inclusion, the quality of support provided to schools and teachers remains questionable throughout. For instance, the community-based education model in Afghanistan shows evidence of improved female student enrollment. However, despite tackling enrollment, large-scale assessments, conducted by ASER in Pakistan (ASER Pakistan, 2016/2023) – for instance – show that lack of appropriate support and training, results in low foundational learning outcomes. On the other hand, the local curricula implemented in the multigrade classrooms of Nepal indicate improved comprehension gains for minority students, demonstrating the impact of context-based education on multigrade learning (CDC, 2019).

These trends suggest that despite the promise of access, learning gaps can only be overcome when pedagogy and assessment are aligned to the needs of the multigrade classrooms and where local needs are met.

Studies reveal a consistent pattern in professional development of teachers employed to teach multigrade classrooms. They reveal that teachers are rarely prepared or trained in a manner to actually address the multigrade classroom reality. Teacher

development curricula rarely include modules related to multigrade teaching, leading new teachers unprepared to handle the tasks at hand (NCERT, 2010). Furthermore, for in-service teachers, professional development sessions tend to be generic and they hardly address actual core issues related to the multigrade mode. However, exceptions exist e.g. MGML training in India, Bhutan's continuous professional development framework for teacher mentoring (Bhutan MoE, 2018; Numajiri et al., 2025). It was further revealed through studies conducted in Nepal and Bhutan that conducting training sessions in the local language and with the local issues in mind. However, these opportunities have hardly been exploited to their full potential across South Asia (Dorji et al., 2021).

Overall, existing gaps in professional development have led to increased teacher improvisation, leading to increased stress due to classroom management issues.

4.2 Challenges and Barriers

Across the different existing contexts within South Asia, studies highlight the presence of a number of challenges and barriers. One of the major barriers exists due to the presence of difficult terrain, particularly amongst populations living in islands and mountainous regions. Additionally, areas affected by conflict, such as Afghanistan, or other areas where local conflicts exist, the continuity of schooling becomes a major challenge. However, this also presents a strength of the multigrade model in that it ensures this continuity in some form. For example, CBE in Afghanistan, BRAC in Bangladesh and LCF in Nepal are prominent examples. These models, incorporating multigrade education at the base, ensure community trust and participation

as well as cost-effective access as compared to monograde schooling, especially in areas with low population density.

Other challenges highlighted by the studies include lack of teacher preparedness, lack of curriculum alignment and planning for the multigrade mode (NCERT, 2010; Sri Lanka MoE, 2019). Furthermore, monograde assessment techniques are applied to evaluate students in this format, which often penalizes offered by this mode (Jamaldini et al., 2022; Qayoom et al., 2024; Nawab & Baig, 2011).

Multigrade education is often affected by shortage of resources – particularly in terms of availability of manipulatives, space and ICT (ASER Pakistan, 2016; Blum, 2007). These are often features of pilots but die out as soon as donor funding is affected. Programs, sponsored by donors, often fail to provide appropriate integration with public schooling, resulting in weak transition to formal schooling and assessment methods.

In contexts involving multi-lingual communities, such as in Nepal and India, minority learners are often excluded in cases where mother-tongue based multi-lingual education (MTB-MLE) is not provided (Jhingran, 2019).

4.3 Policy Implementation and Program Designs

Systemic support incorporates policy and governance. Policies are usually utilized to provide recognition for the application of certain frameworks. They can range from simply providing recognition to the actual provision of the required resources for their implementation. In the realm of recognition without resourcing, we find examples of policy recognition in India's NCERT (2010) and UNICEF India (2016) in the legitimization of

MGML. Furthermore, Nepal's LCF (2019) covers curriculum adaptation according to the local context whereas there are also acknowledgements of rural multigrade education such as in Bhutan's CPD framework (2018).

At the systemic level, articles reveal lack of appropriate system responses (ASER 2016/2023). Furthermore, Sri Lanka's rationalization (2019) is more directed towards theoretical implications, however, its practical implementation is likely associated with losses if the targeted schools are unprepared.

Systemic support, also often relies on donor funding. Donor funded models often fail to properly integrate with the mainstream models, thereby leading to issues when standardized assessments take place. Afghanistan's CBE program and Bangladesh's BRAC initiative are examples of these cases.

It can be concluded that at the systemic level, policies are more inclined towards acknowledging the presence of multigrade education and consider it a legitimate mode of formal schooling. However, there is under-investment in actual implementation of reforms in curriculum, assessments, teacher preparation and deployment and production of resources for multigrade usage.

At the organizational level, multigrade classrooms exist and function in different modes. Generally, they are defined as single-teacher classrooms, where instruction is carried out simultaneously for students from different grades. It exists as a structural response for addressing issues related to teacher shortages, low enrollment, low population density and presence of a difficult terrain, making commuting difficult. This is

especially true in South Asia, leading to the establishment of one-room schools in Pakistan, small schools in India, island schools in Maldives and hill schools in Nepal. In Afghanistan, studies reveal the presence of community-based education and accelerated learning programs (ALP) which exist in villages and rural areas and are considered to be equivalents for the multigrade classrooms (Burde & Linden, 2013; World Bank, 2018a).

It can be deduced that in South Asia, there are two dominant functional modes of multigrade organizational models. The first mode is represented by one-teacher, single unit schools that are typical features of multigrade existence in Sindh and Punjab (Pakistan), hill districts in Nepal, highland communities in Bhutan the sparsely populated islands in Maldives, BRAC schools in Bangladesh and of Sri Lanka's estates (Blum, 2007; ASER, 2016/2023; UNICEF Maldives, 2018). The second mode is represented by combined multigrade sections with a larger school campus. Typical examples of this format can be found in MGML clusters in India. Sometimes, this mode is also adopted in areas where low or declining enrollment leads to merging of grades, resulting in multi-section or multi-grade groupings (NCERT, 2010; Sarangapani & Pappu, 2021).

The organizational models represent sustainability strategies to ensure an appropriate level of enrollment, address teacher shortage and maintain the trust of the community where long commutes are difficult or weather conditions might result in long school closures (Sri Lanka MoE, 2019; Bhutan MoE, 2018).

4.4 Technology Integration and Usage

Literature related to multigrade education, from 2000–2025, shows little evidence of technology integration and usage in South Asian countries. Articles that do reflect technology usage, demonstrate this integration as a part of a wider initiative, rather than as an element specifically focused to address its usage to address multigrade challenges. However, based upon the current infrastructure of South Asian multigrade schooling, low-resource pathways can prove to be promising. Firstly, offline or low-bandwidth resources in the form of self-paced guides should be utilized as these have been a part of multigrade teaching and are productive in regions with low internet connectivity (Juárez & Associates, 2003). Secondly, teacher support tools should be incorporated rather than equipping students with only devices in any form as evidence suggests that edtech solutions are effective only when they improve instruction and eventually learning outcomes (Rodriguez-Segura, 2022). Furthermore, utilization of low-bandwidth channels can also prove beneficial for teacher professional development. Overall, a low-tech, instruction focused approach, aligns with the recommended international guidelines for technology usage and integration for low-income settings. According to the guidelines, design for offline or low-bandwidth usage, and then add technology as resources permit (Hayat, Flam, & Handigol, 2025).

5. DISCUSSION

The results of the systematic review reveal that multigrade education in the South Asian region is mainly shaped by organizational requirements and pedagogical approaches. Previously, this particular mode of educational delivery has been utilized to address prevailing structural issues involving sparsely populated areas, territorial access, chronic teacher shortages and limited resources due to limited financial investments. The literature, however, demonstrates that despite these constraints, multigrade schooling possesses transformative capacity that embodies equity, inclusion, and student-centered pedagogical approaches that can be altered according to the requirements of a particular community. Hence, they provide solid grounding for the implementation of SDG4.

Analysis of emerging themes from an organizational perspective indicates the presence of a variety of configurations across the South Asian region. The models vary according to the requirements of the region. In Pakistan and Nepal, the multigrade model exists to address issues related to lack of qualified teachers, access to education and to appropriate resources. Hence, they are common in rural and remote areas as well as in under-resourced government schools. In the Maldives, multigrade classrooms are a consequence of sparsely populated islands. In India and Sri Lanka, combined classroom models prevail, particularly due to the presence of MGML and school rationalization policies.

The diversity in the local contexts highlights the necessity for curricular and institutional flexibility as well as the need to

accommodate expert-designed modules in teacher training programmes. The need for this adaptation has also been particularly emphasized in UNESCO and World Bank reports.

With regards to the pedagogical models employed, literature is conclusive that student-centered strategies are conducive to multigrade education. Even though the place-based approach has been implemented mostly in Afghanistan and in Bangladesh, under the guise of community-based education, other programs implemented in different regions of South Asia are demonstrative of this assertion. For example, the MGML program in India, shows the effectiveness of peer tutoring in reducing the attrition rate. Multigrade education has the potential to transform education by identifying effective differentiated learning pilots in the Maldives and place-based curricula in Nepal that demonstrate positive effects on overall engagement and learning. Furthermore, the MTB – MLE model of education demonstrates the impact of instruction in the mother-tongue. However, the effectiveness of these models is dependent on teacher training and preparedness and systemic support. This is particularly evident from studies conducted across Afghanistan, Bhutan and Pakistan.

The studies are consistent regarding the strengths of the multigrade model. These include student collaboration, personalized attention, learning autonomy, formation of intergenerational relationships, and connection with the local context and community. The community-based education models in Bangladesh and Afghanistan, have resulted in improved school-community relationships, whereas the MGML and LCF models in India and Nepal that the multigrade mode

can actually lead to enhancements in pedagogical innovations. The inter-level and inter-age interactions can further improve opportunities for equitable access. Hence, with the right systemic level support, multigrade education can facilitate the development of more meaningful and inclusive learning spaces.

Even with the possibilities offered by the multigrade classroom, literature suggests that structural barriers do exist. These barriers consist of insufficient teacher training, and increased demands (Jamaldini et al., 2022; Qayoom et al., 2024). The national curricula remain rigid with its focus on monograde classrooms and leaving little space for flexibility and for differentiating pacing. The assessments follow the same pattern, making it difficult to integrate the multigrade classroom with formal, public schooling (NCERT, 2010; Sri Lanka MoE, 2019). Furthermore, resource shortage continues to plague the multigrade classroom in many regions (ASER Pakistan, 2016; Blum, 2007). Sustainability remains a concern for donor-funded programs such as the CBE in Afghanistan and Bangladesh's BRAC schools (Burde & Linden, 2013). Another structural barrier is linguistic diversity and a foundation of limited MTB-MLE programs is noted as an issue for minority or tribal learners (Jhingran, 2009; Jhingran, 2005; UNESCO, 2024). These risks are referenced in studies that are present from 2000-2025, and still exist, which demonstrate the gap between theory and practice implementation.

The systematic review highlights that lack of institutional support are primarily responsible for shaping teachers' perceptions related to multigrade teaching. There's limited proof of it as being viewed positively, as a pedagogical

opportunity. Mostly, due to lack of appropriate training and availability of adequate resources, teachers view it as an imposed burden. It can be concluded from this revelation that multigrade education is not inherently unfavourable; rather continuous support through policy and implementation determines the effectiveness.

According to SDG4, to ensure sustainable development, it is crucial to include schools from rural areas by providing them with reasonable facilities for educational growth. Community building and implementation of place-based pedagogy had proven this notion to be true. BRAC and ROSC schools in Bangladesh, CBE in Afghanistan and the LCF initiatives in Nepal reveal a vital dimension of multigrade education – community building and involvement, thereby substantiating SDG4’s vision.

Overall, the review confirms that taking the right implementational steps can lead to high quality, culturally sensitive multigrade learning. However, for multigrade education, to perform up to its potential sustained investment in critical areas like teacher development, adequate resources, infrastructure and localized curricula is required.

There are, however, crucial limitations in existing literature. To begin, few studies have noted longitudinal analyses of learning outcomes, limiting our comprehensive perspective of the multigrade educational model in terms of sustained outcomes. In addition, digital technology use remains under-researched, in general, in South Asian countries. Lastly, comparative evaluation of specific teacher training models could contribute to the existing literature.

6. CONCLUSION AND RECOMMENDATIONS

The systematic review evaluated 88 total studies, spanning 2000–2025, comprehensively to establish an understanding of the multigrade education phenomenon in South Asian countries. The evaluated literature included peer-reviewed articles, published documents from international organizations and dissertations. The analysis establishes the role of multigrade classrooms as practical responses to low enrollment or teacher shortages. Furthermore, they also highlight that multigrade education can offer pragmatic solutions for enhancing pedagogical strategies and community involvement, as long as they receive appropriate institutional support.

The multigrade model is restricted due to certain parameters. Teacher training, in particular, is plagued by challenges due to lack of training modules specifically targeted to train teachers in this format. Additionally, failure to align mainstream curriculum with multigrade circumstances, increases teachers' workload. The long-term impacts of this alignment are usually visible in the form of failure of students to perform satisfactorily in standardized national and regional assessments. Moreover, there is a dearth of contextually relevant resources, despite the presence of pilots in Afghanistan, Bangladesh and Nepal. Given these critical challenges, the review suggests alternative patterns of professional development, place-based and community-based curriculum development, and robust institutional support.

The review further considers the possibility of AI-enabled adaptive learning technology, virtual teaching support, and content-localization tools as potential strategies for adaptations

to address these gaps. The combination of place-based pedagogies and authentic integration of technology could provide a sustainable multigrade educational model that is more equitable and accessible.

Further studies on multigrade education should focus on longitudinal analyses to evaluate long-term impacts on enrollment, teacher development, social development and student learning outcomes. In order to identify transferable practices, cross-country comparative studies should also be proposed. Furthermore, there is also a need for investigating the impact of technology integration on multigrade education, under resource and institutional constraints. Studies can target individual areas of education such as professional development and highlight the nature of effective technology integration in under-resourced areas. Finally, future studies should investigate how curriculum alignment and adaptation and pedagogical models can incorporate community involvement and place-based pedagogy to address the needs of learners in linguistically diverse regions.

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