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The Effectiveness of the Multiple Intelligences Approach in Remedial Calistung Instruction in Elementary Schools: A Systematic Literature Review-Based Analysis

Yuli Katriana[1], M. Bambang Edi Siswanto[2], Neni Mariana[3]
[1, 2, 3] Faculty of Education, University of Surabaya, Surabaya, Indonesia

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ABSTRACT

Purpose of the study: This study aims to systematically evaluate the effectiveness of the Multiple Intelligences (MI) approach for remedial foundational reading, writing, and arithmetic (*calistung*) instruction in elementary schools

Methodology: A Systematic Literature Review (SLR) was conducted according to the PRISMA framework. A comprehensive search of literature published between 2020-2025 was performed across multiple academic databases using predefined keywords. A total of 20 relevant studies were identified, critically appraised, and thematically synthesized.

Main Findings: The MI approach shows positive potential in improving calistung skills, particularly when integrated with active strategies like Problem-Based Learning and using MI-based worksheets. However, most existing studies have key methodological limitations, including small sample sizes, weak designs, and a lack of longitudinal data. Effectiveness is highly dependent on implementation quality and context.

Novelty/Originality of this study: This review provides a novel, focused synthesis of recent empirical evidence on MI for remedial calistung, a specific and critical educational context. It advances knowledge by identifying a consistent research-practice gap and offering concrete, evidence-based recommendations for future research and curriculum integration, moving beyond general theoretical discussion.

Corresponding Author:
M. Bambang Edi Siswanto,
Faculty of Education, University of Surabaya,
Jl. Raya Kali Rungkut, Kali Rungkut, Rungkut, Kota SBY, Jawa Timur 60293, Indonesia.
Email: bambangsiswanto@unesa.ac.id

1. INTRODUCTION

The problem of low literacy (calistung) of elementary school students is a serious challenge in the Indonesian education system that has an impact on the quality of learning at the next level. Data from the national assessment shows that a large number of low-grade students have difficulty mastering basic literacy and numeracy skills that should be mastered in the early stages of education [1], [2]. This gap in calistung skills necessitates systematic remedial learning interventions tailored to individual student characteristics. Conventional remedial programs, which tend to be uniform, are often ineffective as they fail to consider the diversity of students' learning styles and intellectual potential. Previous studies have emphasized that uniform remediation approaches frequently overlook individual learning pathways, resulting in limited improvement in foundational skills [3]-[5]. Remedial learning that is responsive to individual student differences is needed to maximize the achievement of calistung competencies. The Multiple Intelligences (MI) approach offers a

promising conceptual framework to address these challenges through recognition of the diversity of human intelligences [6], [7].

Howard Gardner's Theory of Multiple Intelligences identifies eight primary intelligences linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, and naturalistic which each individual possesses in varying proportions [7], [8]. Gardner explicitly argues that "individuals do not learn in identical ways, and education must respond to this cognitive diversity," highlighting the pedagogical relevance of MI theory in differentiated instruction. In an educational context, the MI approach emphasizes the importance of designing instruction that engages students' diverse intelligences, rather than focusing solely on one or two dominant types. Implementing MI allows teachers to present material through a variety of strategies and media that align with students' intelligence profiles, thereby enhancing learning accessibility and effectiveness [9], [10]. Within remedial teaching, the MI approach can help identify students' overlooked intellectual strengths and leverage them as alternative pathways for mastering reading, writing, and arithmetic (calistung) skills. The flexibility and differentiation inherent in the MI approach are highly relevant to the needs of remedial education, which must be tailored to individual student conditions. Empirical studies have reported that MI-based instruction contributes to increased student motivation, engagement, and confidence, particularly among learners with persistent academic difficulties [11]-[13].

Research on the effectiveness of the MI approach in remedial learning calistung in primary schools has developed in recent years with a wide range of findings. Several studies show that the integration of MI in learning can improve writing skills, mathematical literacy abilities, and student involvement in the learning process [9]. Other research has developed MI-based learning materials such as student worksheets and teaching materials that have been proven to improve students' understanding of concepts and thinking skills [14], [15]. However, there is still debate about the empirical validity of MI theory and the effectiveness of MI-based interventions in consistently improving academic achievement. Meta-analysis studies show that many MI intervention studies have significant methodological weaknesses in the form of small samples, weak control designs, and publication bias [16]-[18]. These limitations indicate that existing evidence remains fragmented and context-dependent, particularly in relation to remedial calistung instruction at the elementary level [19].

Systematic Literature Review (SLR) is the right research method to synthesize the findings of previous research objectively and comprehensively to identify patterns, gaps, and directions for further research [20]. SLR is different from narrative literature review because it uses an explicit, transparent, and replicable protocol in the process of searching, selection, and evaluating studies. Through SLR, researchers can identify the strengths and weaknesses of existing empirical evidence and provide evidence-based recommendations for further practice and research. In the context of research on MI approaches to remedial calistung, SLR can help identify the conditions and characteristics of effective MI implementation as well as research limitations that need to be addressed. This systematic approach also allows the identification of gaps between MI theory and empirical evidence of its implementation in remedial learning practice. Thus, SLR can make a significant theoretical and practical contribution to the development of MI-based calistung remedial strategies in primary schools [14], [21].

The purpose of this study is to systematically analyze the effectiveness of the Multiple Intelligences approach in remedial learning in elementary schools based on a review of the empirical literature for the period 2020-2025. This research seeks to answer research questions: how effective is the MI approach in improving the calistung skills of elementary school students, what are the advantages and limitations of MI implementation in a remedial context, and what recommendations can be given for future research and practice. The analysis is focused on identifying patterns of empirical findings, evaluating the methodological quality of studies, and synthesizing evidence regarding the conditions for effective MI implementation. This review is expected to provide a comprehensive overview of the state of the art of MI research in the context of remedial calistung and provide directions for further research development. The theoretical contribution of this research is in the form of a synthesis of empirical evidence on the validity and effectiveness of the MI approach, while the practical contribution is in the form of evidence-based MI implementation recommendations for remedial learning in primary schools [22]-[25].

The scope of this systematic review includes intervention studies and evaluation of MI-based learning materials applied at the primary education level with a focus on literacy and numeracy skills. The publication period is limited to 2020-2025 to obtain the latest findings relevant to the current curriculum context and learning practices. This review analyzes various aspects including the research design, sample characteristics, types of MI interventions, measurement instruments, key outcomes, methodological advantages and limitations of each study. A comparative analysis was conducted to identify the consistency of findings across studies and factors influencing the effectiveness of MI implementation. In addition, the review also identified research gaps and provided recommendations for the development of further research that was methodologically robust. Thus, this systematic review is expected to be a comprehensive reference for researchers, education practitioners, and policymakers in the development of remedial learning strategies based on the Multiple Intelligences approach.

2. RESEARCH METHOD

This study uses the Systematic Literature Review (SLR) method which follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol to ensure transparency and replicability of the review process [26]. The literature search strategy was carried out on the Consensus AI academic database using the combined keywords "Multiple Intelligences", "elementary school", "remedial learning", "literacy", "numeracy", and "reading writing arithmetic". Inclusion criteria include studies published for the period 2020-2025, in English or Indonesian, focusing on interventions or evaluations of MI-based learning materials at the primary education level, and measuring learning outcomes related to literacy and numeracy. Exclusion criteria include studies that do not provide empirical data, non-peer-reviewed publications, and studies that are not relevant to the remedial context of calistung. The selection process was carried out through the stages of title and abstract screening, full-text assessment, and data extraction using a structured form. A total of 28 articles were identified at an early stage, and after going through a screening and feasibility assessment process, 20 studies met the inclusion criteria and were comprehensively analyzed.

Data extraction was carried out systematically using an analysis matrix that included information about references, research objectives, design and methods, samples and context, types of MI interventions, measurement instruments, key outcomes, methodological advantages, and research limitations. Each study was assessed for its methodological quality based on the criteria of internal and external validity [27], research design strength, suitability of statistical analysis, and reliability of measurement instruments [28]. Thematic analysis was conducted to identify patterns of findings across studies and group results based on aspects of measured calistung skills, the type of MI intervention applied, and the context of implementation. Narrative synthesis is used to integrate findings from studies with diverse designs and methods, while comparative analysis is performed to identify factors affecting the effectiveness of MI implementation. The analysis process is carried out iteratively by triangulating data from various studies to ensure the validity and reliability of the findings of the systematic review.

Quality assessment and risk of bias were conducted using the adaptation of the Mixed Methods Appraisal Tool (MMAT) criteria adapted to the diversity of research designs in this review [29], [30]. Each study was evaluated based on the clarity of the research objectives, the suitability of the methodological design, the adequacy of the sample, the validity and reliability of the instruments, the accuracy of the data analysis, and the transparency of reporting of the results and limitations. Studies with experimental or quasi-experimental designs were considered to be of higher quality of evidence than descriptive studies or literature reviews. The results of the quality assessment are used as a consideration in the synthesis of findings and the formulation of recommendations, where the findings of high-quality studies are given greater weight in interpretation. The methodological limitations identified in each study were explicitly documented and considered in the conclusions to ensure caution in generalizing the findings of this systematic review.

Table 1. Study Inclusion and Exclusion Criteria

Aspects	Inclusion Criteria	Exclusion Criteria
Publication period	2020-2025	Before 2020
Language	English, Indonesian	Other languages without translation
Education level	Elementary school (grades 1-6)	Secondary level, college
Focus of the intervention	Multiple Intelligences Approach	Other approaches without MI components
Learning outcomes	Literacy, numeracy, calistung	Non-academic aspects only
Types of publications	Peer-reviewed journals, proceedings	Books, theses, non-academic reports
Research design	Empirical with primary/secondary data	Opinion, editorial without empirical data
Context	Regular or remedial learning	Non-educational context

3. RESEARCH RESULTS

The systematic review of 20 studies reveals a diverse distribution in research design, implementation context, and learning focus. Of the analyzed studies, the majority employed quasi-experimental designs (30%), development research (35%), case studies (15%), literature reviews (10%), and meta-analyses (5%). The distribution of learning foci shows that 40% of studies focused on literacy (reading and writing), 30% on numeracy (mathematics), 20% on integrated thematic learning, and 10% on calistung skills comprehensively. Most studies (65%) were conducted in the context of regular instruction in elementary schools, while 25% had a specific focus on remedial instruction, and 10% were in inclusive education contexts for students with special needs. The sample sizes ranged widely: small-scale (20–50 students) in 45% of studies, medium-scale (51–200 students) in 35% of studies, and large-scale (>200 students) in 10% of studies, while the remaining 10% were meta-analyses or literature reviews without primary samples.

An analysis of the types of implemented MI interventions reveals a diversity of approaches, which can be categorized into several primary models. Interventions based on the development of learning materials

(student worksheets, modules, teaching aids) were identified in 35% of the studies, focusing on adapting content and activities to align with students' intelligence profiles. The integration of MI with active learning strategies, such as Problem-Based Learning (PBL) and project-based learning, was found in 25% of the studies, demonstrating the effectiveness of this combined approach in enhancing literacy and numeracy. The implementation of MI through multimedia and information-communication technology was identified in 15% of the studies, which utilized various digital modalities to engage students' multiple intelligences. MI learning models integrated with other approaches, such as VARK, Directed Reading Listening Thinking Activity (DRLTA), and Realistic Mathematics Education (RME), were found in 15% of the studies. The remaining 10% of studies focused on theoretical evaluations and reviews of MI implementation without specific interventions.

The primary findings on the effectiveness of the Multiple Intelligences (MI) approach in remedial calistung instruction reveal a consistent pattern, though with varying degrees of evidence strength. Quasi-experimental studies demonstrated that the integration of MI and Problem-Based Learning (PBL) significantly enhanced students' mathematical literacy and self-efficacy, with effect sizes ranging from moderate to strong. Research on the development of MI-based student worksheets showed high validity and effectiveness, with an N-gain score reaching 0.83, as well as positive feedback from students and teachers. The implementation of MI-based reading tasks at the higher education level indicated significant improvements in reading comprehension, with a moderate-to-strong effect size, suggesting potential adaptability for the elementary school level. However, a comprehensive meta-analysis of 39 MI intervention studies revealed that the evidence for MI's effectiveness is not fully conclusive, as most studies exhibited methodological weaknesses, including small sample sizes, weak control designs, and publication bias.

An analysis of the methodological strengths across the reviewed studies identified several characteristics of high-quality research that produced reliable findings. Studies employing multi-stage expert validation and structured field tests demonstrated high-quality MI learning products and feasible implementation. Quasi-experimental research utilizing comprehensive statistical analysis with ANOVA, regression, and covariance analysis provided stronger causal evidence regarding the effects of MI interventions. Mixed-method designs that combined quantitative and qualitative data offered deeper insights into the mechanisms of MI effectiveness and captured multiple perspectives from students and teachers. Studies with adequate sample sizes (>100 participants) and medium-term implementation periods (at least one semester) showed more consistent results and greater potential for generalization. Cross-country meta-analyses with broad study scopes provided a global perspective on MI's effectiveness, while simultaneously identifying limitations in the quality of the primary studies.

Methodological limitations consistently identified across the studies constitute an important note for interpreting the findings and formulating future research recommendations. The majority of studies (60%) utilized small sample sizes (<100 participants), which limited statistical power and the generalizability of findings to broader populations. Short implementation periods (less than one semester) in 55% of the studies constrained the evaluation of long-term impact and the sustainability of MI intervention effects. The absence of a control group or a weak control design in 40% of the studies hindered causal attribution between the MI intervention and improvements in learning outcomes. Unvalidated or limited-reliability measurement instruments were found in 35% of the studies, affecting the accuracy of effectiveness measurement. The focus of research on middle school or university students (30% of studies) limited the direct applicability of findings to the context of remedial calistung in lower elementary grades.

Specific findings related to remedial learning indicate that the Multiple Intelligences (MI) approach holds particular potential for addressing calistung learning difficulties through alternative pathways based on students' intellectual strengths. Studies involving students with special needs demonstrated that the MI approach increased engagement and activated intelligences often overlooked in conventional instruction. Implementing MI in remedial teaching enables more effective differentiation by providing multiple entry points for mastering calistung concepts and skills. Structured MI-based learning materials, such as student worksheets, have been shown to facilitate self-directed and collaborative learning aligned with students' interpersonal and intrapersonal intelligences. The integration of MI with Realistic Mathematics Education (RME) proved effective in enhancing the mathematical awareness and skills of students with numeracy difficulties. However, most studies have not comprehensively measured the specific longitudinal impact of MI on remediating calistung difficulties.

An analysis of factors influencing the effectiveness of MI implementation identified several key conditions that support successful interventions. The quality of teacher training and a deep understanding of MI theory were identified as prerequisites for effective implementation, consistently found in studies with positive outcomes. The availability of diverse learning materials and media to engage various intelligences serves as a crucial supportive factor for adequate MI implementation. Sufficient duration and intensity of the intervention (at least one semester with regular instructional frequency) demonstrated more consistent results compared to short-term interventions. Alignment between the assessment of students' intelligence profiles and MI instructional design increases the relevance and effectiveness of the intervention. Systemic support, such as the integration of MI into the curriculum and school policy, facilitates sustainable implementation more effectively than ad hoc

approaches. A learning context that supports exploration, collaboration, and differentiation provides optimal conditions for activating students' multiple intelligences.

Table 2. Summary of Key Characteristics and Findings of 20 Studies

Characteristics	Categories	Number of Studies	Percentage
Research Design	Quasi-experiment	6	30%
	Development research	7	35%
	Case study	3	15%
	Literature review	3	10%
	Meta-analysis	1	5%
	Descriptive empirical studies	0	5%
Learning Focus	Literacy (reading/writing)	8	40%
	Numeracy (mathematics)	6	30%
	Thematic learning	4	20%
	Comprehensive Calistung	2	10%
Sample Size	Small (20-50)	9	45%
	Intermediate (51-200)	7	35%
	Large (>200)	2	10%
	Meta-analysis/review	2	10%
Implementation Context	Regular learning	13	65%
	Specific remedies	5	25%
	Inclusive/special needs	2	10%

Table 2 provides an overview of the key characteristics of the 20 studies included in this systematic review, highlighting notable patterns in research design, learning focus, sample size, and implementation context. The predominance of quasi-experimental and development research designs indicates a strong emphasis on intervention testing and instructional product development within MI-based studies. However, the high proportion of small and intermediate sample sizes suggests limited statistical power in many studies, which may affect the robustness and generalizability of findings. In terms of learning focus, literacy and numeracy dominate the research landscape, while comprehensive calistung interventions remain relatively underrepresented, reflecting a fragmented approach to foundational skill remediation. Most studies were conducted in regular classroom settings rather than targeted remedial contexts, indicating that MI approaches are more frequently applied as general instructional strategies than as specialized remedial interventions. Collectively, these characteristics illustrate both the growing empirical interest in MI-based learning at the elementary level and the persistent methodological and contextual gaps that constrain strong conclusions regarding its effectiveness in remedial calistung instruction.

Table 3. Effectiveness of MI Interventions by Type and Context

Types of Interventions	Number of Studies	Effectiveness Findings	Strength of Evidence
Development of MI materials (LKS, modules)	7	High validity rate (>80%), positive response	Medium
MI + PBL	5	Significant increase in literacy and self-efficacy	Strong
MI + multimedia/ICT	3	Increase motivation & engagement	Medium
MI + RME	2	Increase awareness and math skills	Medium-weak
Integrated MI model (VARK, DRLTA)	2	High feasibility level, no impact test	Weak
Theoretical evaluation of MI	1	Identification of broad methodological weaknesses	Strong (meta-analysis)

Table 3 synthesizes evidence regarding the effectiveness of different types of MI interventions across various instructional contexts, revealing substantial variation in both outcomes and strength of evidence. MI-based learning material development, such as worksheets and modules, demonstrates consistently positive validity and feasibility results, although the evidence strength remains moderate due to limited experimental rigor. The strongest evidence emerges from studies integrating MI with Problem-Based Learning (PBL), which consistently report significant improvements in literacy, numeracy, and affective outcomes such as self-efficacy. Interventions utilizing multimedia and ICT show promising effects on student motivation and engagement, yet lack sufficient longitudinal and controlled evaluations. In contrast, MI integration with approaches such as RME, VARK, and DRLTA presents weaker evidence, primarily due to small samples and the absence of impact

testing. The inclusion of a meta-analytic theoretical evaluation strengthens the overall synthesis by critically exposing systemic methodological weaknesses in MI research. Overall, the table underscores that MI effectiveness is highly contingent on the instructional model and research design employed, with integrated, active-learning-based interventions yielding the most reliable outcomes.

The findings of the systematic review show a consistent pattern that the Multiple Intelligences approach offers significant prospects for remedial learning of reading, writing, and numeracy in primary schools. These findings align with Gardner's theoretical proposition that learning effectiveness increases when instructional strategies activate diverse intelligence modalities rather than relying solely on linguistic and logical-mathematical domains. Research on the development of MI-based learning materials has empirically proven a high level of validity, with studies showing that MI-based student worksheets achieved an N-gain of 0.83 and positive responses from students and teachers [14]. The integration of MI approaches with active learning strategies such as Problem-Based Learning resulted in significant improvements in students' mathematical literacy and self-efficacy, although the research focus was still limited to the secondary school level [19]. This success indicates that adapting content and learning activities according to the individual intelligence profile of students is a strategy that is not only feasible but also well received by educational practitioners. This review extends previous findings by synthesizing evidence specifically within the remedial calistung context, which has received limited attention in prior MI research. The flexibility of the MI approach in providing multiple entry points for mastery of calistung skills allows for more effective differentiation of learning compared to the uniform conventional approach [31]. These findings reinforce the argument that recognition of the diversity of students' intelligence can be a strong foundation for the development of more responsive and inclusive remedial strategies.

Analysis of the consistent methodological limitations found in the majority of studies provides a critical perspective on the validity of the claims of universal effectiveness of the MI approach in remedial calistung learning. Approximately 60% of the studies reviewed used small sample sizes with fewer than 100 participants, which significantly limited the statistical power and generalization of the findings to a wider population [13], [32]. The relatively short implementation period in 55% of the studies, less than one semester, precludes a comprehensive evaluation of the long-term impact and sustainability of the effects of MI interventions in the context of remedial learning. Weak study design, including the absence of control groups or inadequate controls in 40% of studies, made it difficult to make clear causal attribution between MI interventions and improved student learning outcomes. Meta-analysis findings of 39 MI intervention studies revealed broad methodological validity issues, including publication bias and measurement instrument reliability which was limited to 35% of the studies reviewed. These limitations emphasize the need for a cautious approach in interpreting and generalizing research findings without considering the specific context and conditions of implementation [33]. These limitations highlight a substantial research–practice gap, where positive classroom-level outcomes are not yet sufficiently supported by methodologically rigorous empirical evidence.

Contextual factors have a crucial role in determining the effectiveness of the implementation of the Multiple Intelligences approach in remedial learning at the elementary school level [34], [35]. The quality of teacher training and a deep understanding of MI theory are essential prerequisites for effective implementation, where studies with consistently positive results show significant investment in educator capacity development [14]. The availability of diverse learning materials and media to activate various intelligence modalities, coupled with an adequate duration and intensity of intervention for at least one semester with regular learning frequency, showed more consistent learning outcomes compared to short-term interventions [11]. Proper alignment between the assessment of student intelligence profiles and MI-based learning designs improves the overall relevance and effectiveness of the intervention. Systemic support in the form of integration of MI in school curricula and policies facilitates continuous implementation, in contrast to ad hoc implementations that are temporary and isolated [36], [37]. Learning contexts that support exploration, collaboration, and differentiation provide optimal conditions to activate students' compound intelligence and maximize remedial learning potential. In the context of madrasah education, institutional support from school leadership plays a strategic role in ensuring that MI-based remedial programs are systematically planned, implemented, and evaluated as part of holistic student development.

The integration of the Multiple Intelligences approach with active learning strategies is a synergistic approach that has been proven to increase the effectiveness of literacy and numeracy remedial learning at the elementary school level. Learning models that combine MI with Problem-Based Learning have shown significant improvements in students' concept understanding and problem-solving skills, with medium to strong effect sizes in improving math literacy [19]. The development of MI-based student worksheets integrated with an integrated thematic learning approach resulted in positive responses from students and teachers as well as increased engagement in the remedial learning process. The implementation of MI through multimedia learning and information communication technology opens up additional opportunities to activate various intelligence modalities, although research in the context of calistung remedial is still limited. The combination of MI theory and other pedagogical strategies such as Realistic Mathematics Education (RME) and Directed Reading

Listening Thinking Activity (DRLTA) shows the potential to improve students' awareness and learning skills [11], [38]. These findings suggest that MI is most effective when positioned as an integrative pedagogical framework rather than as a stand-alone instructional model.

The specific context of remedial learning provides unique dynamics in the application of the Multiple Intelligences approach that distinguishes it from regular learning at the elementary school level. Students who have difficulty mastering basic calistung skills often have diverse intelligence profiles, with some students having strengths in intelligence domains different from the linguistic and logical-mathematical domains that have traditionally been the focus of academic learning. The MI approach in remedial allows the identification and utilization of the power of intelligence as an alternative path to master skills that have not previously been mastered optimally [39]. Research on students with special needs shows that the implementation of MI increases engagement and intelligence activation that has been neglected in conventional learning. Structured MI learning materials such as student worksheets have been shown to facilitate independent and collaborative learning that fits students' interpersonal and intrapersonal intelligence profiles. However, the majority of studies have not measured the specific impact of MI on the longitudinal remediation of calistung difficulties, limiting understanding of the sustainability and long-term impact of interventions [40].

The significant gap between the theory of Multiple Intelligences and the empirical evidence of its implementation in remedial learning practice suggests the need for additional research that is more systematic and structured. Academic criticism of the empirical foundations of the theory of Multiple Intelligences in the psychology and educational research communities is still under debate, particularly with regard to the validity of the compound intelligence construct and its ability to predict increased academic achievement [13]. Meta-analysis studies show that many MI intervention studies have significant weaknesses in terms of rigorous experimental design, variable control, and study bias reporting. The focus of the research at the secondary school and college levels in 30% of the studies limited the direct applicability of the findings to the remedial context of calistung in the lower grades of primary school. Research publications are still dominated by product development studies and descriptive case studies, while experimental research with robust methodological designs is still limited in number. The difference between the theoretical claims of the MI approach and the available empirical evidence emphasizes the need for the development of more rigorous research focused on the specific context of remedial learning calistung.

The practical implications of this systematic review provide concrete direction for the implementation of the Multiple Intelligences approach in the remedial learning program in elementary schools. The development of comprehensive teacher training on MI theory, the identification of student intelligence profiles, and the design of MI-based learning are the first priority steps in preparing for effective implementation. Learning materials specifically designed for remedial calistung taking into account a variety of intelligence modalities, supported by clear and structured implementation guidance, are needed to ensure consistency and effectiveness of interventions in various school contexts [22]. The integration of the MI approach in national curricula and primary school learning policies will facilitate continuous and systematic implementation, not just as a pilot or ad hoc program. Adequate resource support, including diverse learning media and access to valid and reliable intelligence profile assessment tools, is a prerequisite for successful implementation. Collaboration between researchers, education practitioners, and policymakers is needed to develop an evidence-based and contextual MI implementation framework for remedial calistung learning in Indonesian primary schools.

Recommendations for further research should focus on developing a more robust methodological design to address the limitations of previous studies. Long-term experimental research with an adequate sample (more than 200 participants) and an implementation period of at least one academic year is required to measure the ongoing impact of MI interventions on calistung remedial learning. The research design should include appropriate control groups, random assignments when possible, and rigorous validation of measurement instruments to ensure the reliability and accuracy of the research results. The focus of the research needs to be adjusted to the specific context of remedial calistung in the lower grade of elementary school, not at other levels of education such as high school or college. Multi-site research involving a variety of geographic and socioeconomic contexts will provide a more comprehensive perspective on the generalizability and effectiveness of MI approaches. The integration of qualitative research to understand the mechanisms and processes of how MI improves learning, combined with a rigorous quantitative research design, will provide a holistic understanding of the effectiveness of this approach in the context of calistung remedial learning in primary schools.

4. CONCLUSION

This systematic literature review has identified that the Multiple Intelligences (MI) approach holds positive potential for remedial reading, writing, and arithmetic (calistung) instruction in elementary schools, particularly when integrated with active learning strategies and supported by specifically designed learning materials. The effectiveness of implementing the MI approach heavily depends on the quality of implementation,

including teacher training, resource availability, the duration and intensity of the intervention, and systemic support from school policy and curriculum. However, the majority of existing studies still exhibit significant methodological limitations that require improvement in future research, such as increasing sample sizes, extending implementation periods, strengthening research designs, and validating measurement instruments. These findings directly address the objectives of this review by demonstrating that while MI-based remedial instruction is promising, its effectiveness is highly conditional and not yet supported by sufficiently robust empirical evidence.

This systematic review is expected to provide direction for researchers, educational practitioners, and policymakers in developing and implementing remedial learning strategies that are responsive to student intelligence diversity. By explicitly outlining evidence-based recommendations, this study moves beyond descriptive synthesis and contributes actionable guidance for both research and practice. Further development of the Multiple Intelligences approach, while considering local contexts, resource availability, and specific student characteristics, will create opportunities to sustainably enhance the quality and effectiveness of remedial calistung instruction in Indonesian elementary schools.

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