



A SYSTEMATIC LITERATURE REVIEW ON EFFECTIVE LEARNING MEDIA FOR SLOW LEARNERS IN PRIMARY EDUCATION

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Submitted:

DOI:

Revised:

Accepted:

Keywords:	Abstract
Slow Learners; Learning Media, Primary Education; Systematic Review, Media Effectiveness;	This systematic literature review aims to identify and analyze various types of learning media that are effective in improving educational outcomes for slow learners in primary education. Slow learners are students with below-average cognitive abilities who do not qualify as intellectually disabled but face significant challenges in grasping abstract concepts and maintaining attention. This group requires learning interventions that are concrete, repetitive, and engaging to support their cognitive development. Using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology, this review examines 25 peer-reviewed studies published between 2013 and 2023. The selection process involved systematic searches through databases such as Google Scholar, ERIC, ScienceDirect, and Garuda, with a focus on studies related to "slow learner," "instructional media," and "primary education." Each study was appraised using a five-point rubric encompassing criteria of validity, reliability, clarity, applicability, and ethical compliance. Findings reveal that media integrating visual, tactile, and manipulative features are consistently effective for slow learners. These media such as flashcards, multimedia games, counting kits, and simulation-based tools enhance comprehension, motivation, and classroom participation. Key design principles include simplicity, multisensory input, and adaptability. The study also presents a quantitative formula to evaluate effectiveness, along with practical and theoretical implications for future media development and inclusive education practices.

INTRODUCTION

Background of the Study

Slow learners are children who face significant academic challenges due to cognitive delays that are measurable but do not meet the criteria for intellectual disability. Typically, these students have IQ scores ranging between 70 and 89 slightly below the average range. Although they do not qualify for formal special education



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services, slow learners often require differentiated instructional strategies and customized learning tools to realize their full academic potential.

In mainstream classrooms, slow learners frequently struggle to keep pace with their peers, particularly in core academic subjects such as reading, writing, and mathematics. Their limited ability to grasp abstract concepts, slower information retention, and shorter attention spans often make conventional teaching methods ineffective. Without adequate support, these students are at risk of academic disengagement, low self-esteem, and long-term underachievement.

Problem of The Study

Although the need to support slow learners has gained increased recognition within the framework of inclusive education, many of these students still lack appropriate instructional accommodations in general education settings. The mismatch between traditional teaching methods and the unique learning needs of slow learners raises a critical question: What types of learning media are most effective in enhancing the academic outcomes, engagement, and comprehension of slow learners in primary education?

Research's State of the Art

Recent studies have highlighted the importance of individualized, multisensory teaching approaches tailored to the learning profiles of slow learners. Learning media that incorporate visual, auditory, and kinesthetic elements have shown promise in improving student understanding, motivation, and classroom engagement. These developments reflect growing attention to adaptive learning models. However, the research findings remain varied in scope and methodology, and while some demonstrate positive outcomes, others are too narrowly focused or context-specific to be widely applicable.

Gap Study & Objective

Despite growing interest in this area, existing literature on learning media for slow learners remains fragmented. There is a lack of systematic reviews that comprehensively synthesize findings across studies to identify effective media types, core design elements, and practical implications. This fragmentation limits educators' ability to apply evidence-based strategies in real-world classroom settings. Therefore, a clear gap exists in providing a consolidated, empirically grounded reference for best practices in this field.

This study aims to conduct a systematic literature review focused on the use of effective learning media for slow learners in primary education. The primary objective is to identify the types of instructional media that have demonstrated the most significant academic improvements for students within this group. In addition, the study seeks to analyze the specific design features and instructional components that contribute to the success of these media in supporting comprehension, engagement, and retention. Beyond identifying effective approaches, the review also intends to offer practical recommendations for educators, instructional media developers, and policymakers. These recommendations are aimed at guiding the development and implementation of more inclusive, adaptive, and effective educational practices that meet the diverse needs of slow learners. By grounding its analysis in both theoretical frameworks and empirical findings, this study ultimately aspires to promote equity in learning and reinforce inclusive education practices at the foundational level.

METHOD

Type and Design

This research adopts a Systematic Literature Review (SLR) design, structured using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework. The SLR approach is particularly suitable for synthesizing existing empirical evidence systematically and transparently. The study aims to review and analyze peer-reviewed research articles published between 2013 and 2023 that examine the use of learning media for slow learners in primary education. The PRISMA framework allows for rigorous filtration of sources through four stages: identification, screening, eligibility, and inclusion (Moher et al., 2009; Page et al., 2021). By focusing on the last decade, this design ensures the findings reflect current trends and innovations in inclusive education and instructional technology.

Data and Data Sources

The data utilized in this study comprise a collection of empirical research articles that specifically explore the use of educational media for slow learners aged 6 to 12 years. These articles were systematically gathered from four reputable academic databases: Google Scholar, ERIC (Education Resources Information Center), ScienceDirect, and Garuda. The selection of these databases was based on their extensive indexing of both international and regional scholarly literature, particularly in the fields of education and psychology. Moreover, these platforms were considered highly relevant for accessing studies conducted in Indonesian and Southeast Asian contexts, which align with the geographical focus of the research. To ensure the quality and relevance of the data, only articles that met specific criteria were included namely, those published between January 2013 and December 2023, written in

English or Bahasa Indonesia, and demonstrating methodological rigor, empirical evidence, and clear relevance to the educational needs of slow learners in primary school settings.

Data collection technique

The data collection process in this Systematic Literature Review (SLR) was conducted through a structured and replicable search and screening procedure. To ensure comprehensive coverage of relevant literature, the study employed a Boolean search strategy using carefully selected keyword combinations, including "*slow learner*," "*learning media*," "*primary school*," "*instructional tools*," and "*inclusive education*." These terms were connected using logical operators such as AND and OR to enhance the precision and breadth of search results. Additionally, search filters were applied to limit the results to peer-reviewed articles published between 2013 and 2023, and written in either English or Bahasa Indonesia.

The inclusion criteria required that studies be empirical in nature, involve primary school students aged 6–12 identified as slow learners, be published in reputable peer-reviewed journals, and clearly report methodological details such as sample size, media types used, and learning outcome measures. Conversely, the exclusion criteria ruled out theoretical papers, editorials, opinion pieces, book reviews, and any studies that lacked clear methodological documentation or were unrelated to the focus on instructional media and slow learners.

To further enrich the dataset and avoid overlooking key research, the study also implemented backward reference searching also known as snowballing by examining the reference lists of selected articles to identify additional relevant studies (Booth et al., 2016). This rigorous and systematic approach ensured the completeness, credibility, and relevance of the literature included in the review.

Data analysis

The selected articles in this study underwent a systematic extraction and analysis process that integrated both quantitative and qualitative synthesis methods to ensure comprehensive evaluation. A standardized coding sheet was developed to extract essential data from each article, including the author(s) and year of publication, geographical location and context of the study, research design and methodology, sample size and participant characteristics, type of learning media utilized, measured learning outcomes, and the theoretical foundations underlying the instructional approach such as constructivism, cognitive load theory, and multisensory learning principles.

Following extraction, the data were categorized thematically based on media characteristics (e.g., tactile, visual, interactive digital), instructional strategies, and outcome measures such as student engagement, comprehension, and retention. This categorization enabled the identification of patterns and design features that consistently supported academic improvements among slow learners. To evaluate methodological soundness, each article was assessed using a 5-point quality rubric adapted from Akbar (2015), which covered five domains: validity of research design, reliability of data and instruments, clarity of presentation, applicability of findings to real classroom settings, and ethical compliance. Studies that scored 20 out of 25 or higher were considered high quality and given greater weight in the synthesis.

Finally, data interpretation was conducted by triangulating findings across studies and analyzing them in relation to the underlying theoretical frameworks. This allowed the researcher to derive evidence-based conclusions and generate practical recommendations for teachers, instructional media developers, and policymakers, with the overarching aim of enhancing inclusive education practices for slow learners in primary education.

RESULTS AND DISCUSSIONS

1. Overview of Selected Studies

Out of the 25 studies reviewed, various forms of educational media were identified, all of which demonstrated distinct advantages for slow learners in primary school settings. The media were grouped into four main categories: visual media, manipulative media, multimedia tools, and augmented reality or interactive simulations.

Table 1. Summarizes the Characteristics of the Reviewed Studies

No	Author(s) & Year	Location	Sample Size	Media Type	Outcomes Measured
1	Rahim et al. (2018)	Malaysia	30	Visual (charts, flashcards)	Improved math and vocabulary
2	Wahyuni (2020)	Indonesia	25	Manipulative (counting box)	Better problem-solving in math
3	Simanjuntak & Putri (2021)	Indonesia	32	Multimedia (digital stories)	Increased literacy and motivation

4	Putra et al. (2022)	Indonesia	28	AR (interactive math sim)	Higher engagement and test performance
5	Arifianto et al. (2021)	Indonesia	35	Visual + tactile flashcards	Improved retention and focus
6	Sari & Nugroho (2019)	Indonesia	20	Multimedia (educational apps)	Increased comprehension and accuracy

Visual media such as charts, pictures, and flashcards were widely used across studies. These tools help students make connections between abstract concepts and concrete representations. For example, a study conducted in Malaysia by Rahim et al. (2018) showed that students exposed to visual media performed significantly better in basic arithmetic and vocabulary retention.

Manipulative media, including blocks, puzzles, and counting kits, were particularly effective in hands-on learning contexts. In a quasi-experimental study by Wahyuni (2020), the use of a manipulative “counting box” improved mathematical problem-solving skills by 37% among Grade 3 students. These tools leverage tactile engagement to build conceptual understanding and fine motor skills, which are often underdeveloped in slow learners.

Multimedia tools, such as animated videos, interactive whiteboard content, and educational games, were highlighted in studies like Simanjuntak & Putri (2021), where digital storytelling platforms improved reading comprehension and student engagement. These tools offer auditory and visual stimulation, which is essential for learners who benefit from repetition and multimodal reinforcement.

Lastly, augmented reality (AR) and interactive simulations have recently gained traction. For instance, Putra et al. (2022) implemented AR-based math activities and reported significant increases in learners’ enthusiasm and test scores. These high-tech media formats offer immersive experiences that can simplify abstract content and offer real-time feedback.

The review revealed that the most successful learning outcomes were achieved when media were aligned with the specific cognitive and behavioral characteristics of slow learners. Media effectiveness was consistently higher when tools were designed with simplicity, repetition, sensory richness, and adaptability in mind. These principles echo the core tenets of universal design for learning (UDL) and cognitive load theory (Sweller, 2011).

2. Effective Media Characteristics

Effective learning media designed for slow learners consistently demonstrate several core characteristics that contribute to enhanced learning experiences:

- Simplicity:** The content is broken into smaller, digestible parts, ensuring that learners are not overwhelmed by complex instructions or abstract ideas. Simple design aids in reducing cognitive load, making information more accessible (Sweller, 2011).
- Multisensory Engagement:** Effective media incorporate visual, auditory, and kinesthetic elements to stimulate multiple senses, reinforcing memory retention and concept clarity (Mayer, 2009; Pashler et al., 2008).
- Feedback Mechanisms:** Immediate feedback embedded in media tools—such as quizzes, progress bars, or interactive response systems—helps maintain learner motivation and correct misconceptions promptly (Shute, 2008).
- Engagement:** Tools are designed to be visually appealing, colorful, and relatable to children’s real-life experiences. Engagement increases attention and participation levels, particularly among learners who struggle with focus and sustained effort (Guthrie & Wigfield, 2000).
- Adaptability:** Effective media can be tailored to individual learning levels and paces. This includes adjustable difficulty levels or modular content delivery, allowing students to progress at their own speed (Tomlinson, 2014).

These elements collectively form a framework for designing media that not only support cognitive development but also enhance emotional engagement and classroom inclusion for slow learners.

Example Formula for Media Effectiveness Evaluation

To assess the effectiveness of learning media for slow learners in a measurable manner, this study adopts a quantitative approach inspired by Akbar (2015). The formula used is:

$$\text{Effectiveness(\%)} = \frac{\text{Post-test Score} - \text{Pre-test Score}}{\text{Maximum Score} - \text{Minimum Score}} \times 100$$

This formula quantifies the improvement in student learning outcomes after the implementation of instructional media. By comparing pre-test and post-test scores, educators can identify whether a specific medium leads to statistically significant learning gains. In line with Akbar’s standard, media achieving an

effectiveness score above 70% is considered pedagogically effective. This threshold indicates that the instructional tool not only supports comprehension but also contributes to meaningful academic improvement (Akbar, 2015).

The utility of this formula lies in its adaptability across different educational settings and subjects. For instance, when applied in studies involving manipulative-based tools like counting boxes or digital simulations, the formula helps validate their empirical impact on learner progress. This evidence-based metric provides educators and policymakers with a robust tool to evaluate and select media interventions that are aligned with the cognitive profiles of slow learners. Moreover, its incorporation into program evaluations can support accountability and refinement of inclusive instructional practices (Sugiyono, 2019; Creswell, 2014).

3. Discussion of Findings

The results of this systematic review consistently affirm that **manipulative and interactive media** significantly enhance both cognitive performance and learning motivation in slow learners at the primary level. Multiple studies confirm that when instructional tools are aligned with the sensory preferences and processing needs of slow learners, measurable improvements in academic outcomes are observed (Kristianti, 2021; Sutopo et al., 2020). Tools such as box-based learning kits, for instance, enable students to engage in concrete, hands-on experiences that aid in the internalization of abstract mathematical and linguistic concepts.

Kristianti (2021) demonstrated how the integration of **visual and tactile modalities** through color-coded instructional components in a counting box facilitated mathematical understanding among students with learning difficulties. Similarly, Wiranda (2021) reported that manipulatives embedded in structured learning media fostered improved attention span and memory retention, especially in arithmetic operations like addition and subtraction. These findings are further corroborated by multimedia-based interventions (Sutopo et al., 2020), where the use of digital games, animations, and interactive simulations resulted in heightened student engagement and increased concept mastery.

Despite these promising results, several **systemic and contextual barriers** hinder the optimal implementation of such media. One significant constraint is **the cost of media production**, particularly for materials involving durable components like acrylic or electronic elements. Additionally, **teacher readiness** remains a challenge; many educators lack adequate training in the design, use, and adaptation of learning media tailored for students with special needs (Ahmad et al., 2022). The review also highlights a **gap in professional development programs** that specifically address inclusive pedagogical strategies, which affects the sustainability of media use in classrooms.

Another issue is the **availability of context-appropriate resources**. While some studies show the success of media imported or adapted from other contexts, their effectiveness tends to diminish when not localized to students' linguistic, cultural, or curricular backgrounds (Yusuf & Widodo, 2019). Therefore, teacher involvement in media development is critical to ensure relevance and usability. Furthermore, the absence of ongoing **formative evaluation** of media use can lead to stagnation, where tools are used without feedback loops that inform improvement.

In summary, the effectiveness of manipulative and interactive media for slow learners is well-supported by empirical evidence. However, to scale such innovations sustainably, it is imperative to address production affordability, teacher capacity, and contextual adaptability. Future research and policy should thus focus on collaborative media development models, school-based training systems, and evidence-based instructional design tailored for children with diverse learning needs.

CONCLUSION

This systematic review demonstrates that instructional media designed specifically for slow learners must incorporate a balance of simplicity, engagement, multisensory elements, and adaptability to individual learning paces. The most effective media identified in the reviewed studies include tactile manipulatives and interactive multimedia platforms, which support the unique cognitive and behavioral profiles of slow learners by promoting concrete, experiential learning.

Media such as counting boxes, puzzles, and animated simulations were consistently associated with improvements in learning outcomes, motivation, and classroom engagement. However, beyond their pedagogical effectiveness, these tools also require strategic implementation, including affordable design, teacher training, and regular assessment. Challenges such as high production costs and limited accessibility to specialized resources remain persistent barriers that need to be addressed.

Future research should prioritize scalable and sustainable media designs that are both accessible and inclusive. This includes exploring the integration of emerging technologies, such as augmented reality and adaptive digital platforms, within special education. Ultimately, developing effective, low-cost, and culturally relevant instructional media will be crucial in narrowing the achievement gap for slow learners and promoting equity in primary education.

REFERENCES (write using APA 7th Style)

- Ahmad, S., Hadi, S., & Latifah, R. (2022). *Teacher Competence in Inclusive Education: A Case Study in Elementary Settings*. Journal of Special Needs Education, 9(1), 29–40.
- Akbar, S. (2015). *Instrumen Perangkat Pembelajaran*. Bandung: Remaja Rosdakarya.
- Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic Approaches to a Successful Literature Review* (2nd ed.). Sage Publications.
- Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications.
- Gough, D., Oliver, S., & Thomas, J. (2012). *An Introduction to Systematic Reviews*. Sage Publications.
- Guthrie, J. T., & Wigfield, A. (2000). Engagement and motivation in reading. In M. L. Kamil et al. (Eds.), *Handbook of Reading Research*, Vol. 3, 403–422.
- Kitchenham, B. (2004). *Procedures for Performing Systematic Reviews*. Keele University Technical Report TR/SE-0401.
- Kristianti, A. (2021). *Pengembangan Media Kotak Hitung untuk Siswa SD*. Universitas Negeri Malang.
- Mayer, R. E. (2009). *Multimedia Learning* (2nd ed.). Cambridge University Press.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D.G. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine*, 6(7), e1000097. <https://doi.org/10.1371/journal.pmed.1000097>
- Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., ... & Moher, D. (2021). The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning styles: Concepts and evidence. *Psychological Science in the Public Interest*, 9(3), 105–119.
- Petticrew, M., & Roberts, H. (2006). *Systematic Reviews in the Social Sciences: A Practical Guide*. Blackwell Publishing.
- Putra, R., Yusuf, M., & Kartika, H. (2022). Augmented reality for primary math instruction: A slow learner case study. *Journal of Technology and Inclusive Education*, 5(3), 65–74.
- Rahim, N. A., Jalil, R., & Ismail, F. (2018). Visual aids in teaching mathematics to slow learners. *Malaysian Journal of Learning and Instruction*, 15(1), 45–62.
- Shute, V. J. (2008). Focus on formative feedback. *Review of Educational Research*, 78(1), 153–189.
- Simanjuntak, D., & Putri, N. (2021). Digital storytelling as a strategy for inclusive literacy education. *International Journal of Instructional Technology*, 18(4), 112–124.
- Sugiyono. (2019). *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Sutopo, H., et al. (2020). "Multimedia Interaktif untuk Anak Berkebutuhan Khusus." *Jurnal Teknologi Pendidikan*, 22(2), 115–124.
- Sweller, J. (2011). *Cognitive Load Theory*. Springer.
- Tomlinson, C. A. (2014). *The Differentiated Classroom: Responding to the Needs of All Learners*. ASCD.
- Wahyuni, D. (2020). Improving math performance through manipulative tools for slow learners. *Journal of Educational Research and Practice*, 10(2), 80–89.
- World Health Organization. (2019). "International Classification of Functioning, Disability and Health." Geneva: World Health Organization.
- Wiranda, I. (2021). *Media Pembelajaran Interaktif untuk Siswa Diskalkulia*. Universitas Negeri Yogyakarta.
- Yusuf, M., & Widodo, W. (2019). *Cultural Relevance in Media for Special Education*. Journal of Multicultural Education, 13(3), 115–123.
- Zharandont, S. (2015). "Pengaruh Warna terhadap Psikologi Belajar Anak." *Jurnal Psikologi Anak*, 7(2), 101–112.