

## ANALYSIS OF THE IMPACT OF PJBL AND DIGITAL PUZZLE INTEGRATION: A SYSTEMATIC REVIEW OF ELEMENTARY STUDENTS' WRITING SKILLS

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### Abstract

*The persistently low narrative writing skills among elementary students are mainly caused by conventional teaching methods and the limited use of interactive media that stimulate imagination and sequential thinking. This study aims to analyze the impact of integrating Project-Based Learning (PjBL) and digital serial picture puzzles on improving students' narrative writing skills through a Systematic Literature Review (SLR) approach. The SLR was conducted by systematically identifying, screening, evaluating, and thematically synthesizing 18 relevant articles published between 2018 and 2025, sourced from national and international databases. Data analysis involved thematic synthesis, comparative mapping, and content analysis to capture the effectiveness and synergy of the two approaches. The synthesis results indicate that digital serial picture puzzles are effective in enhancing students' abilities to organize storylines, describe characters, and understand narrative structures logically and creatively. The application of PjBL significantly improves students' motivation, creativity, independence, and collaboration in the writing process. The integration of PjBL and digital puzzles produces a synergistic effect, resulting in higher quality narrative writing in terms of coherence, organization, and content depth. However, the review also found a lack of direct implementation studies on the integration of these two approaches. The study recommends the development of an integrated PjBL–digital puzzle learning model and teacher training to support optimal implementation in elementary schools.*

**Keywords:** Project-Based Learning; digital puzzle; narrative writing; elementary school; systematic literature review

### Abstrak

Rendahnya keterampilan menulis narasi pada siswa sekolah dasar secara persisten terutama disebabkan oleh metode pembelajaran yang masih konvensional serta terbatasnya penggunaan media interaktif yang mampu merangsang imajinasi dan berpikir runtut. Penelitian ini bertujuan untuk menganalisis dampak integrasi Project-Based Learning (PjBL) dan media digital puzzle gambar berseri terhadap peningkatan keterampilan menulis narasi siswa melalui pendekatan Systematic Literature Review (SLR). SLR dilakukan dengan mengidentifikasi, menyaring, mengevaluasi, dan mensintesis secara tematik 18 artikel relevan terbit tahun 2018 hingga 2025, yang diambil dari basis data nasional dan internasional. Analisis data dilakukan melalui sintesis tematik, pemetaan komparatif, dan analisis konten untuk menangkap efektivitas dan sinergi kedua pendekatan. Hasil sintesis menunjukkan bahwa media digital puzzle gambar berseri efektif dalam meningkatkan kemampuan siswa dalam mengorganisasi alur cerita, mendeskripsikan tokoh, dan memahami struktur narasi secara logis dan kreatif. Penerapan PjBL secara signifikan meningkatkan motivasi, kreativitas, kemandirian, serta kolaborasi siswa dalam proses penulisan. Integrasi PjBL dan puzzle digital memberikan efek sinergis yang menghasilkan kualitas tulisan narasi yang lebih baik dari segi koherensi, organisasi, dan kedalaman isi. Namun, tinjauan ini juga menemukan masih terbatasnya studi implementasi langsung mengenai integrasi kedua pendekatan tersebut. Studi ini merekomendasikan pengembangan model pembelajaran terpadu PjBL–puzzle digital serta pelatihan guru guna mendukung implementasi optimal di sekolah dasar.

**Kata Kunci:** Project-Based Learning; puzzle digital; menulis narasi; sekolah dasar; systematic literature review

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## Introduction

Writing skills are one of the fundamental competencies that elementary school students must master, as they serve as the foundation for the development of language abilities at the next educational levels (Pamuji & Setyami, 2018). Besides being a technical skill, writing is also a crucial cognitive aspect that shapes critical thinking, imagination, and creativity from an early age. One of the most important writing skills at the elementary level is narrative writing, where students are required to express ideas, feelings, and experiences in the form of a coherent and logical story. When well developed, this ability supports comprehensive literacy development, including reading, speaking, and critical thinking skills needed at higher levels of education (Salafia, 2021; Wiwikananda & Susanti, 2022). However, various studies and field observations show that the narrative writing skills of elementary students in Indonesia are still at a concerning level (Agustiani, 2025; Inggriyani & Fazriyah, 2018).

Narrative writing itself poses specific challenges as it requires students to systematically develop story elements such as plot, characters, conflict, and setting (Wibowo et al., 2020). Many students struggle to arrange logical event sequences, describe settings, create characters, and connect all these elements into a unified narrative. This results in low-quality narrative writing and hampers the development of students' critical and creative thinking skills (Koilara et al., 2020; Rofi, 2022). This situation is exacerbated by conventional teaching methods that are monotonous, lack media innovation, and provide little room for creative idea exploration (Fajrudin et al., 2023). For example, at SD Negeri Burangkeng 04, writing instruction is dominated by lectures and rarely uses visual or interactive media. Teachers tend to only provide written instructions without stimulating students' imagination and thinking, causing difficulties in building plot, setting, and logical connections between events. Moreover, the lack of project-based activities limits students' active participation and their ability to generate story ideas (Fajrudin et al., 2023).

To address these issues, two innovative approaches have been widely studied: Project-Based Learning (PjBL) and the use of serial picture digital puzzle media. Serial picture digital puzzle media are visual tools that help students understand event sequences, recognize characters, and build cause-and-effect logic more concretely (Fadliyani et al., 2024; Utomo et al., 2022). Empirical evidence shows that this media can enhance imagination, creativity, and make it easier for students to systematically structure narrative elements. Meanwhile, PjBL emphasizes students' active engagement in real projects, increasing motivation, collaboration, and critical as well as creative thinking in narrative writing (Nurazizah et al., 2025).

Theoretically, this research is based on two main frameworks. First, constructivist theory underpins PjBL, where knowledge is actively built through meaningful experiences and social interaction. Second, dual coding theory supports the use of serial picture digital puzzle media, emphasizing that simultaneous visual and verbal processing enhances comprehension and memory retention. The integration of both is expected to improve coherence, creativity, and narrative writing outcomes for elementary students.

According to the literature, both PjBL and serial picture digital puzzle media have been proven to positively impact narrative writing skills in elementary students. Puzzle media help students understand narrative structure, enrich imagination, and facilitate the development of plot and character descriptions (Fadliyani et al., 2024; Utomo et al., 2022).

Meanwhile, PjBL has been effective in increasing motivation, creativity, and student independence through active involvement in writing projects (Nurazizah et al., 2025). However, most studies discuss these approaches separately, so the synergistic potential between instructional models and visual media in supporting narrative writing has not been fully explored.

The research gap lies in the lack of comprehensive studies integrating PjBL and serial picture digital puzzle media in narrative writing instruction at the elementary level. Previous studies mainly highlight the effectiveness of one approach in isolation, without exploring their integration as a holistic instructional strategy.

A number of PjBL studies in Indonesia have shown its effectiveness in improving productive skills, motivation, creativity, and positive attitudes at various levels, including language mastery and writing (Artini et al., 2018; Astawa et al., 2017; Darmuki et al., 2023; Hidayati et al., 2023). On the other hand, visual puzzle-based media such as pictorial crossword puzzles have also been effective in improving vocabulary, concept understanding, and initial writing skills of elementary students (Maududi et al., 2018). However, these studies still focus on separate aspects and rarely explore the integrative effects of both approaches in elementary narrative writing instruction. Furthermore, the implementation of pictorial crossword puzzles in advanced narrative writing and its synergy with PjBL has not been empirically tested. Other studies also highlight the need for innovative instructional designs that integrate PjBL and interactive visual media to improve writing outcomes holistically (Darmuki et al., 2023; Hidayati et al., 2023). Therefore, this study is needed to identify, analyze, and synthesize empirical evidence on the strengths, weaknesses, and potential integration of PjBL and serial digital puzzle media in elementary narrative writing instruction.

The main objective of this research is to analyze the impact of integrating Project-Based Learning and serial picture digital puzzle media on improving elementary students' narrative writing skills. Specifically, the research aims to: (1) identify the strengths and weaknesses of each approach based on empirical evidence; (2) evaluate the synergistic potential of their integration; and (3) provide recommendations for an integrated instructional model based on recent research synthesis.

Thus, this study is expected to provide both theoretical and practical contributions to the development of narrative writing pedagogy at the elementary level. Through a Systematic Literature Review approach, this research is also expected to fill existing research gaps and provide real contributions to improving the quality of narrative writing instruction that is adaptive to the demands of the times (Agustiani, 2025; Fajrudin et al., 2023; Inggriyani & Fazriyah, 2018; Nurazizah et al., 2025; Pamuji & Setyami, 2018; Utomo et al., 2022; Wibowo et al., 2020).

## Research Method

This study employed a Systematic Literature Review (SLR) design, following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The choice of SLR was based on the aim of obtaining a comprehensive, objective, and integrated understanding of empirical evidence regarding the effectiveness and synergy of Project-Based Learning (PjBL) and digital serial picture puzzle media in improving elementary students' narrative writing skills. SLR was chosen because it is able to synthesize findings from various primary studies, identify patterns, research gaps, and trends systematically, making it superior to traditional narrative literature reviews or single empirical studies. The SLR process was conducted systematically through four main stages: identification, selection, eligibility

assessment, and data synthesis. In the identification stage, literature searches were conducted online using databases such as Google Scholar, SINTA, DOAJ, and Garuda Kemdikbud. The search keywords were strategically formulated to include terms such as “media puzzle berseri,” “elementary narrative writing,” and “Project-Based Learning elementary,” as well as their English equivalents, to ensure a comprehensive coverage of relevant studies. All retrieved articles were then evaluated based on predefined inclusion criteria: (1) published between 2018 and 2025; (2) focused on elementary education; (3) investigated the implementation of Project-Based Learning (PjBL) or the use of digital serial picture puzzles in narrative writing instruction; (4) contained empirical data related to students’ learning outcomes or writing skills; and (5) written in either Indonesian or English. Articles that did not meet these criteria—such as those lacking a clear research method, focusing on secondary education, or discussing non-digital puzzles—were excluded from the analysis.

The initial search yielded 212 articles, which were then screened based on their titles and abstracts, resulting in 42 articles deemed relevant. A full eligibility assessment of the content was then conducted, resulting in 18 articles that met all criteria for further analysis. The data analysis procedure was carried out in a stepwise and systematic manner. First, a thematic synthesis was conducted by identifying, coding, and categorizing the main themes related to PjBL and digital puzzle media interventions in narrative writing instruction. Second, comparative mapping was performed, mapping and comparing findings across studies based on key variables such as research design, sample characteristics, implementation strategies, and impacts on narrative writing skills. Third, content analysis was carried out to assess the methodological quality, depth of empirical data, and strengths and weaknesses of the findings in each article. All analytical procedures were thoroughly and transparently documented, including the tracking of coding processes and the justification of decisions in data categorization, thus allowing replication by future researchers. Research ethics standards were maintained by only utilizing open-access articles, avoiding plagiarism, and ensuring that all sources were properly cited in accordance with prevailing scientific practices.

## **Result And Discussion**

### **Result**

#### **General Description of Data and Study Selection Process**

This study employs a Systematic Literature Review (SLR) approach to identify, evaluate, and synthesize findings related to the integration of digital serial picture puzzle media and Project-Based Learning (PjBL) in narrative writing instruction at the elementary school level. The literature search was conducted using national and international databases with the main keywords “serial puzzle media,” “elementary narrative writing,” and “Project-Based Learning elementary” for publications from 2018–2025.

The initial search identified 80 journals, consisting of 30 national and 50 international journals. All articles then underwent a screening process based on inclusion criteria, namely: focus on elementary school level, study of digital puzzle media or PjBL, inclusion of empirical data, and relevance to the development of narrative writing skills. Categorization was carried out to map the articles into three main categories: (1) Implementation of serial picture puzzle media; (2) Application of PjBL; and (3) Development of visual media in narrative writing instruction.

Through further selection, 20 main journals were obtained, consisting of 10 national and 10 international journals (Table 1). The selected articles were analyzed in depth based on

research focus, methods, and contributions to the development of narrative writing instruction.

### Classification of Main Literature Review Findings

Table 1. The following shows the main findings of the literature study related to serial puzzle media, PjBL, and their integration in narrative writing learning.

**Table 1.** Main Findings of the Literature Study

No.	Researcher (Year)	Research Findings
1	Sutriyani et al., (2022)	Puzzle media helps students understand and sequence story events logically.
2	Amalia & Napitupulu (2022)	Visual puzzles stimulate the emergence of creative ideas in narrative writing.
3	Qomariah et al. (2025)	Students become more confident in adding details and variations to their stories after using puzzles.
4	Husna & Salahuddin (2024)	Puzzles help students understand cause-and-effect relationships between events
5	Septiani et al., (2020)	Puzzles assist students in structuring the orientation, complication, and resolution of stories..
6	Yunita & Supriatna (2021)	Visual media helps maintain students' focus and concentration during the writing process.
7	Juniar et al. (2025)	Puzzles train students to be meticulous in identifying details in story images.
8	Nurazizah et al. (2025)	PjBL increases learning enthusiasm as it results in tangible writing products.
9	Torres et al.(2021)	PjBL encourages group work in designing and developing storylines.
10	Handhika et al. (2021)	Students learn to solve problems while composing and revising stories.
11	Syarifah & Emiliyasi, (2019)	PjBL supports a complete writing process: planning, drafting, revising, and publishing.
12	Demirbas & Sahin (2023)	The final written products are more coherent and mature through project-based instruction.
13	Nainggolan et al. (2025)	Puzzles provide strong visual support in the generation of story ideas.
14	Wibowo et al. (2020)	Both puzzles and PjBL encourage discussion and peer exchange among students.
15	Hartinah & Abdullah (2018)	Students more quickly understand characters, settings, and conflicts through serial pictures.
16	Sababalat & Sitompul (2024)	Puzzle media increases students' motivation and interest in writing narratives.
17	Sari & Alwi (2024)	PjBL increases students' independence and responsibility in completing writing tasks.
18	Aisyah et al. (2025)	The combination of visual media and PjBL improves paragraph coherence in narratives.
19	Syamsiani & Budiarto (2024)	Serial picture puzzles help lower-ability students to start writing.
20	Oktaviani & Elmojahed (2023)	Integration of digital puzzles in PjBL improves the quality of story content and organization.

### Synthesis of Main Findings

Analysis of 11 articles focusing on the use of serial picture puzzle media revealed positive effects on improving elementary students' narrative writing skills. Several key findings are as follows:

1. **Understanding Story Structure and Sequence**  
Students found it easier to sequence events and organize the narrative structure (orientation, complication, resolution). As stated by Sutriyani et al. (2022), *"Students were able to arrange the sequence of picture events coherently, making the storyline clear."*
2. **Stimulation of Creative Ideas and Imagination**  
Visual puzzles encourage the emergence of new ideas and enrich story details. Amalia & Napitupulu (2022) stated, *"Serial pictures made students imagine and come up with their own ideas for writing."*
3. **Strengthening Understanding of Cause and Effect and Details**  
Puzzle media helps students understand cause-and-effect relationships between events (Husna & Salahuddin, 2024) and increases attention to story details (Juniar et al., 2025).
4. **Improving Focus and Cognitive Readiness**  
Visual media maintains students' concentration during the writing process (Yunita & Supriatna, 2021). Syamsiani & Budiarto (2024) added, *"Serial picture puzzles are effective in helping students who have difficulty starting to write narratives."*

From seven articles examining the implementation of PjBL in narrative writing instruction, the main benefits found are as follows:

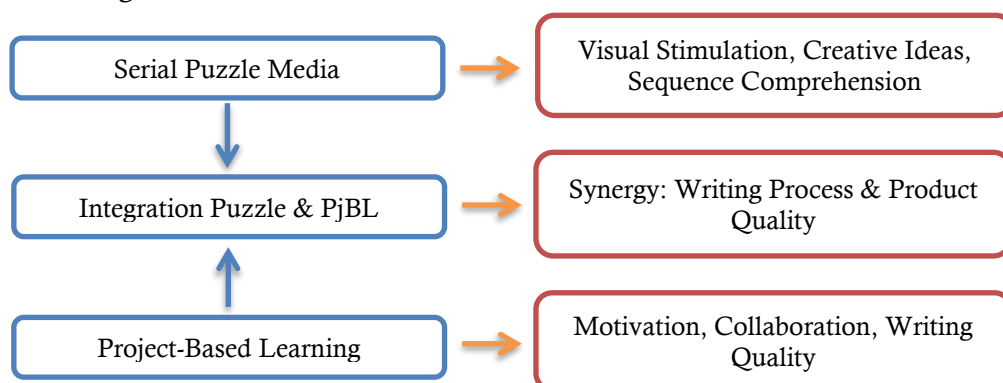
1. **Increased Motivation and Student Engagement**  
Demirbas & Sahin (2023) stated, *"Students' enthusiasm increased because they produced tangible written works that were shared."* PjBL also encourages independence and responsibility in completing writing tasks (Sari & Alwi, 2024).
2. **Collaboration and Problem-Solving Skills**  
Torres et al. (2021) reported that PjBL encourages group discussion in designing and developing stories. Handhika et al. (2021) asserted, *"Students learn to solve problems together when revising story drafts."*
3. **Improvement in Writing Process and Product Quality**  
PjBL supports a complete writing process from planning, drafting, revising, to publishing (Syarifah & Emiliasari, 2019), resulting in more coherent and mature written products (Murcia et al., 2024).

Four key articles discuss the integration between digital puzzle media and the PjBL approach. The synthesis findings show:

1. **Synergistic Effects on Writing Process and Products**  
Oktaviani & Elmojahed (2023) reported, *"Integration of digital puzzles into PjBL significantly improves the quality of story content and organization."* Puzzles serve as visual scaffolding, while PjBL provides a systematic and collaborative writing framework.
2. **Improvement of Paragraph Coherence and Integration**  
The combination of both approaches enhances paragraph cohesion and strengthens the narrative structure (Aisyah et al., 2025).
3. **Increase in Student Motivation and Interest**  
Sababalat & Sitompul (2024) emphasized that puzzle media in PjBL significantly increases students' motivation and interest in writing.

**Summary of Main Findings**

A summary of the main findings can be seen in the thematic relationship diagram as shown in Figure 1.



**Figure 1.** Thematic Relationship Diagram of Findings

Based on Figure 1, it can be explained that the SLR results indicate:

1. Several studies reported that serial puzzle media helped students understand narrative structures, design, and express narratives in a more sequential, imaginative, and detailed manner;
2. Project-Based Learning makes a significant contribution to building motivation, collaboration, independence, and problem-solving skills in the narrative writing process; and
3. The integration of digital puzzles and PjBL demonstrates synergistic potential to enhance the quality of both the writing process and student products, although direct implementation research remains very limited.

**Discussion**

**Interpretation of Key Findings**

This systematic review demonstrates that the use of digital serial picture puzzles and the Project-Based Learning (PjBL) approach-either separately or in combination-significantly enhances elementary school students' narrative writing skills. Serial picture puzzles help students sequence events, understand story structure, and develop creative ideas. Meanwhile, PjBL increases students' motivation, collaboration, and independence in the writing process. When combined, these approaches complement each other and result in improved writing processes and products, as supported by findings from Oktaviani & Elmojahed (2023) and Syamsiani & Budiarto (2024)

**Relation to Previous Literature**

These findings are in line with Sutriyani et al. (2022), who emphasized the benefit of serial pictures in helping students sequence stories, and Amalia & Napitupulu (2022), who highlighted the role of such images in stimulating imagination. The effectiveness of PjBL in fostering participation and collaboration is also supported by Demirbas & Sahin (2023) and Torres et al. (2021).

This synergy is well explained by Lev Vygotsky's sociocultural theory, which states that learning occurs best through social interaction and with the support of scaffolding tools. In this study, digital puzzle images serve as visual scaffolds, while PjBL provides a collaborative

environment for students to develop their narrative skills within their Zone of Proximal Development (ZPD). The integration of both methods thus creates optimal conditions for student learning—an area that has not been widely explored in previous research.

### **Contribution of the Research**

This study suggests a valuable direction for elementary education, especially in the development of more innovative and effective models for teaching narrative writing. The synthesis of evidence indicates that integrating interactive visual media with project-based learning has strong potential to enhance both the writing process and the quality of students' work. Based on these findings, teachers and schools are encouraged to consider adopting this combined approach to foster greater engagement and achievement in narrative writing among their students.

### **Implications**

The findings of this study have several important implications for various stakeholders in elementary education. For teachers, the integration of digital puzzle media and Project-Based Learning (PjBL) offers an opportunity to make narrative writing lessons more engaging and effective, as these approaches can stimulate students' creativity and collaborative skills. For schools, it becomes essential to provide adequate teacher training focused on the use of digital media and the practical implementation of PjBL, ensuring that educators are well-equipped to adopt these innovative strategies in the classroom. Meanwhile, for media developers, there is a pressing need to design and produce digital puzzle media that are relevant to local culture and aligned with curricular objectives, so that the learning materials not only support students' writing development but also resonate with their everyday experiences.

### **Limitations**

This research is limited to a literature review and has not directly tested the integration of PjBL and digital puzzles in classrooms. Moreover, most studies analyzed are from specific regions, so the results may not represent the entire context of elementary schools in Indonesia.

### **Recommendations for Further Research**

Future studies are encouraged to conduct direct trials of this integrated model in various elementary schools and regional contexts to strengthen the empirical evidence of its effectiveness. Experimental or quasi-experimental research designs could be implemented to compare the narrative writing outcomes between groups using the integrated approach and those employing conventional methods. Furthermore, longitudinal studies would be valuable to observe the long-term impact of integrating digital puzzle media and Project-Based Learning on students' writing skills, creativity, and motivation. In addition, the development and validation of appropriate assessment instruments are important to accurately measure the effectiveness and sustainability of this instructional model over time and across different educational settings.

### **Conclusion**

Based on the Systematic Literature Review, both digital serial picture puzzles and the Project-Based Learning (PjBL) model independently demonstrate significant positive effects on elementary students' narrative writing skills, with puzzles enhancing story structure

understanding, imagination, and focus, and PjBL improving motivation, creativity, collaboration, and the quality of the writing process through systematic, project-based activities. The novelty of this study lies in its synthesis of existing research, which reveals that integrating digital serial picture puzzles as visual scaffolding with PjBL as a structured writing framework has strong potential to comprehensively enhance both the process and outcomes of narrative writing for elementary students—an area previously unexplored in empirical research. Therefore, teachers are encouraged to combine these approaches to foster more engaging and effective narrative writing instruction, and further research is recommended to develop and empirically test this integrated instructional model, along with enhanced teacher training in digital media and PjBL for optimal classroom implementation.

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