



Storytelling in Secondary Education: A Systematic Review of Pedagogical Impacts

Narración en la educación secundaria: una revisión sistemática de los impactos pedagógicos

Nurul Huda Ibrahim¹
Aisyah Kamaruddin²

| 1

Fecha recibido: julio 25 del 2025

Fecha aprobado: noviembre 2 del 2025

How to cite this article: Ibrahim, N. H., & Kamaruddin, A. (2026). Storytelling in Secondary Education: A Systematic Review of Pedagogical Impacts. *Actualidades Pedagógicas*, (87), e5505. DOI: <https://doi.org/10.19052/ap.vol1.iss87.5505>

- 1 Senior lecturer at Universiti Utara Malaysia (UUM). She holds a Ph. D. in Pedagogy Education from Universiti Pendidikan Sultan Idris (UPSI). Her research focuses on educational leadership, innovative pedagogy, and experiential learning within Malaysian school contexts, particularly in rural and semi-rural settings. Her recent work examines transformational and empathetic leadership, storytelling as a pedagogical approach, and the integration of digital and immersive learning to enhance student engagement and learning outcomes. She has also contributed to research on inclusive education and communication training for pre-service teachers. She has presented her research at international conferences and continues to publish in the areas of educational leadership and pedagogical innovation. Her work aims to bridge theory and practice by developing contextually relevant and impactful educational strategies. Email: nhuda_i@uum.edu.my ORCID: <https://orcid.org/0000-0001-7986-6189>
- 2 Senior Lecturer at Universiti Utara Malaysia (UUM) under the College of Arts and Sciences, School of Education. She has a strong academic background in history, with a specialization in Malay historiography and Malaysian constitutional history. She began her academic journey by obtaining a Bachelor's Degree in History from the University of Malaya in 2011. She then pursued her Master's degree in Southeast Asian History at Universiti Sains Malaysia (USM), which she completed in 2014. Driven by a deep interest in the study of Malaysian history and culture, she went on to complete her PhD in Malaysian History at USM in 2022. ORCID: <https://orcid.org/0000-0003-4617-2679>

Abstract

This systematic literature review examines the impact of storytelling on secondary school learning, focusing on studies published from 2021 to 2025. Using the PRISMA protocol, 1,124 articles from Scopus, Web of Science, and ERIC were screened. After applying eligibility and quality criteria, 30 high-quality studies were analyzed thematically. Findings reveal that storytelling contributes to learning in five key areas. Cognitively, it supports understanding, critical thinking, and problem-solving. Emotionally, it enhances motivation, empathy, and inclusive classroom experiences. Linguistically, it improves literacy, creative writing, and oral communication. Culturally, storytelling fosters identity formation, civic awareness, and inclusivity. Pedagogically, it inspires innovative lesson designs, interactive resources, and student-centered assessment practices. In conclusion, storytelling is a powerful, inclusive pedagogy that can enrich secondary education.

Keywords: storytelling pedagogy, secondary education, cognitive development, emotional engagement, identity formation, pedagogical innovation

Resumen

Esta revisión sistemática de la literatura examina el impacto de la narración en el aprendizaje de estudiantes de educación secundaria, centrada en estudios publicados entre 2021 y 2025. Utilizando el protocolo PRISMA, se examinaron 1124 artículos provenientes de Scopus, Web of Science y ERIC. Tras aplicar criterios de elegibilidad y calidad, se analizaron temáticamente 30 estudios de alta calidad. Los resultados revelan que la narración contribuye al aprendizaje en cinco áreas clave. En el ámbito cognitivo, favorece la comprensión, el pensamiento crítico y la resolución de problemas. En el plano emocional, mejora la motivación y la empatía y promueve experiencias inclusivas en el aula. Desde la perspectiva lingüística, fortalece la alfabetización, la escritura creativa y la comunicación oral. En el ámbito cultural, la narración fomenta la formación de la identidad, la conciencia cívica y la inclusión. Finalmente, desde el punto de vista pedagógico, impulsa diseños de lecciones innovadores, recursos interactivos y prácticas de evaluación centradas en el estudiante. En conclusión, la narración es una pedagogía poderosa e inclusiva que puede enriquecer la educación secundaria.

Palabras clave: pedagogía de la narración, educación secundaria, desarrollo cognitivo, compromiso emocional, formación de la identidad, innovación pedagógica

Introduction

Storytelling is an engaging pedagogical method, particularly beneficial for secondary school students as they develop abstract thinking and higher-order cognitive abilities (Gunawardena & Brown, 2021). Incorporating storytelling techniques into secondary education can transform the classroom environment, fostering increased student engagement and motivation (Anrasiyana, 2021; Steinfadt, 2013). Storytelling can cultivate a more inclusive and supportive learning environment. Rather than traditional didactic methods, narratives can capture students' attention, making learning a more active and participatory process. This is because storytelling has been proven to keep students active and to help them gain more confidence in showing their abilities (Anrasiyana, 2021). Moreover, integrating storytelling aligns with the developmental needs of secondary school students, who are increasingly capable of processing complex themes, interpreting symbolic meanings, and reflecting on moral and ethical dilemmas. Storytelling is also a helpful tool for students learning English as a second language, helping them produce higher-quality writing and better story structure (Mead, 2002). Stories build confidence and fluency in speaking (Sharma, 2018). When students are allowed to participate in telling a story with their peers, it improves their confidence in their pronunciation and communication skills.

This research incorporates the secondary students. As adolescents transition from concrete operational thought to more abstract reasoning, narratives can act as a bridge, making complex concepts more accessible and relatable (Wandhe, 2024). The innate human affinity for stories can be leveraged to enhance learning outcomes in diverse subject areas (Smeda et al., 2014). In this developmental stage, students are refining their capabilities in critical thinking, problem-solving, and creative expression, all of which can be stimulated through well-crafted narratives (Rahmawati, 2014). Adolescents also navigate significant personal and academic challenges, and pedagogical strategies that incorporate storytelling can foster emotional resilience, empathy, and a sense of connection, addressing their social and emotional needs alongside academic goals. Furthermore, identity formation is a critical aspect of adolescent development; stories that reflect diverse experiences and perspectives can promote self-awareness, cultural understanding, and a sense of belonging (Kim et al., 2021).

Rationale for this Systematic Literature Review

Problem Statement

In the current educational landscape, secondary school students often struggle to engage with abstract concepts, develop critical thinking, and maintain motivation across core subjects such as science, mathematics, and history. Traditional teaching methods often lack the emotional and cognitive appeal needed to captivate students, particularly in culturally diverse, linguistically complex classrooms. Storytelling has long been recognized as an effective pedagogical approach that enhances comprehension, empathy, and student engagement. Despite these claims, the integration of storytelling in secondary education remains inconsistent, with limited empirical evidence of its impact across the cognitive, emotional, and social dimensions of learning.

Although numerous studies have explored storytelling in early childhood and primary education, there is a noticeable gap in consolidated evidence regarding its effectiveness at the secondary level. Most existing research is fragmented, discipline-specific, or anecdotal. There is a lack of comprehensive systematic reviews that critically analyze and synthesize empirical findings on how storytelling influences academic outcomes, communication skills, identity development, and learner motivation among secondary school students. This gap hinders the development of informed teaching strategies and policy decisions to optimize storytelling in adolescent learning contexts.

Traditional literature reviews (LRs) often lack the methodological rigor required for an unbiased and comprehensive synthesis of existing research. One of the main disadvantages is the lack of a structured, transparent procedure for selecting and analyzing studies. This can result in selective reporting and subjective interpretations, where the author may unintentionally favor sources that align with their viewpoint while excluding contradictory findings. Additionally, traditional LR's rarely include detailed documentation of the databases searched, keywords used, or criteria for inclusion and exclusion, making the process difficult to replicate. The lack of standardized quality appraisal further weakens the reliability of the conclusions drawn. As a result, traditional LR's may offer an incomplete or skewed perspective on the research landscape, limiting their usefulness for evidence-based decision-making.

Systematic literature reviews (SLRs) offer several advantages over traditional reviews, particularly in their methodological transparency, reliability, and comprehensiveness. SLRs follow a predefined protocol, often based on frameworks such as PRISMA, ensuring a clear, replicable process for identifying, selecting, and analyzing relevant studies. This structured approach minimizes the risk of bias and improves the objectivity of the findings. SLRs also include quality assessment criteria to evaluate the methodological soundness of each included study, thereby enhancing the validity and credibility of the review. Moreover, SLRs are comprehensive in scope, typically covering multiple databases and using well-defined search terms to ensure that all relevant literature is captured. As a result, SLRs provide a more balanced and accurate synthesis of the evidence, making them particularly valuable for informing practice, policy, and future research directions.

6 | Compared to existing SLRs, this SLR provides a more targeted and updated perspective on the impact of storytelling in secondary school education. While previous reviews have largely focused on early childhood or primary settings, this SLR specifically addresses storytelling at the secondary level, an area that has received limited attention despite its growing relevance. Furthermore, it incorporates a broader, more recent range of studies (from 2021 to 2025) across diverse subject areas, including science, language, and social studies, thereby enhancing its cross-disciplinary relevance. It also introduces a multidimensional thematic framework that categorizes the impact of storytelling into cognitive, affective, linguistic, creative, and socio-emotional domains, offering a deeper, more comprehensive understanding of its educational value.

Unlike some existing SLRs that primarily summarize findings, this review critically evaluates the quality and methodologies of the included studies and offers actionable insights for educators and policymakers. This enhances its effectiveness as a practical and scholarly contribution to the field of narrative pedagogy in secondary education. The SLR, therefore, serves as a rigorous, structured approach to collecting, analyzing, and synthesizing research, using transparent, replicable procedures at each step (Higgins et al., 2011). The main objective of this review is to systematically examine the impact of storytelling in secondary education by organizing existing empirical evidence under thematic categories such as cognitive development, emotional engagement, language acquisition, cultural identity, and pedagogical innovation.

This SLR provides several meaningful contributions for both academic and practical communities. Researchers may better understand the thematic trends

and pedagogical outcomes of storytelling, enabling more targeted, evidence-based classroom interventions. For policymakers, the findings emphasize the value of integrating narrative-based strategies into curriculum frameworks to enhance student engagement and holistic learning. Ultimately, this study aims to offer insights that support the design of more inclusive, reflective, and student-centered educational policies and practices.

Research Question

The research question is a vital component of any SLR. As highlighted by Mohamed Shaffril et al. (2021), it serves as the primary reference point throughout the review process, assisting researchers in identifying relevant keywords, selecting appropriate databases, and guiding the data extraction phase. In the present SLR, the research question was formulated using the PICo framework, a commonly used approach for developing qualitative research questions (Lockwood et al., 2015). Before applying PICo, several preliminary ideas were explored based on prior SLRs in education and narrative learning, such as Enciso et al. (2023) and Heinemeyer et al. (2024). Therefore, the formulated research question for this review is: *What is the impact of storytelling on learning experiences for secondary school students in classroom settings?*

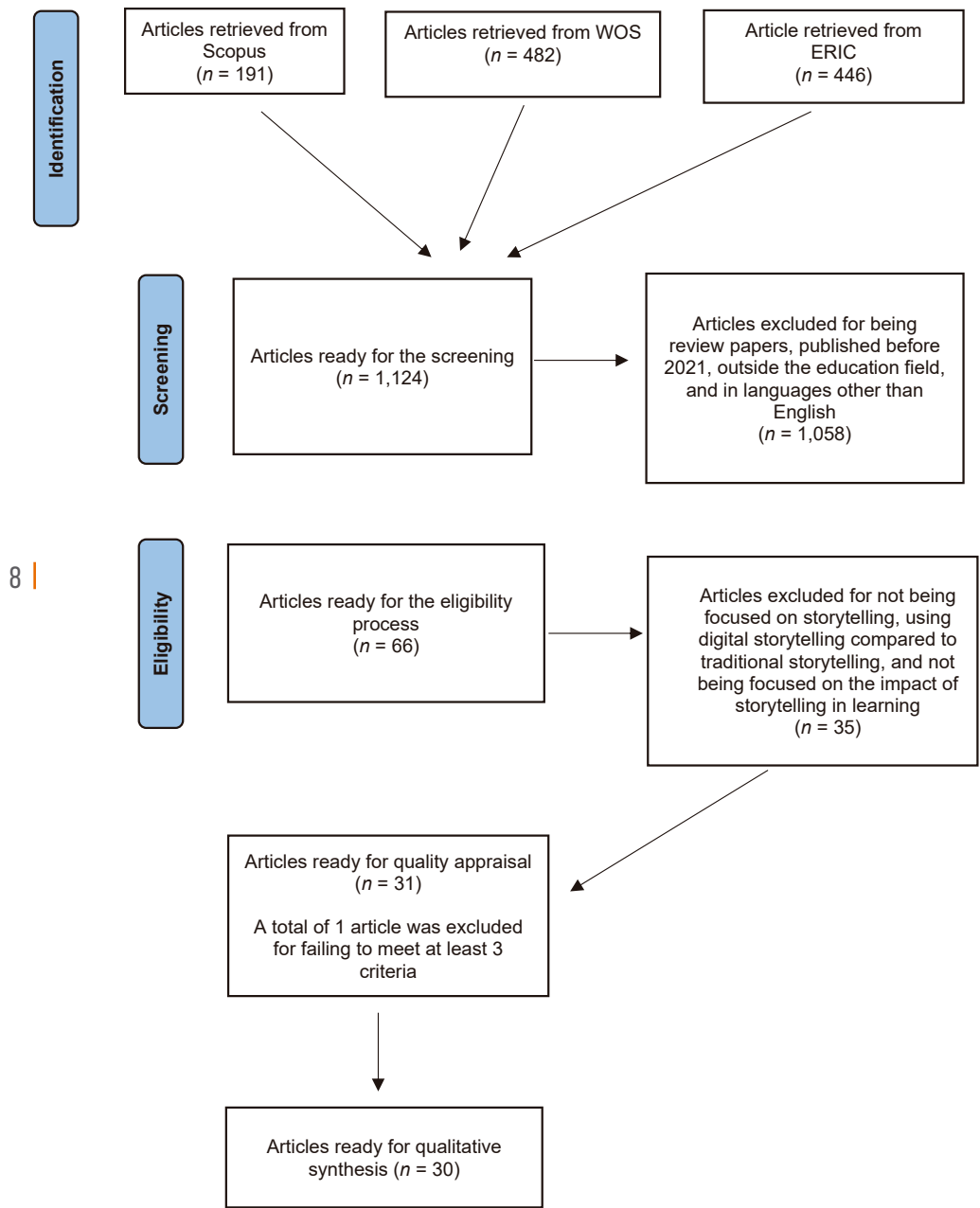
| 7

Methodology

Review Protocol—PRISMA

This SLR follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. PRISMA was developed by Moher et al. (2009) and later refined by Page et al. (2021). PRISMA aims to provide clear methodological guidelines for conducting SLRs, with one of its main advantages being a systematic search strategy and quality control over the selected materials. Although PRISMA was initially designed for use in the health and medical fields, Page et al. (2021) emphasized its flexibility and applicability across other disciplines. Based on the PRISMA framework, the researchers developed this SLR methodology comprising four main steps: formulating the research question, conducting a systematic search, assessing article quality, and extracting and analyzing the data (Figure 1).

Figure 1. Flow Diagram



Source: Own elaboration

Formulation of the Research Question—PICO

The research question is a crucial component that guides the researcher in achieving the stated objectives of this SLR. To ensure clarity and relevance, the PICO framework proposed by Lockwood et al. (2015) was used to develop the research question. PICO stands for P = Population, I = Interest, and Co = Context. In this review, P refers to primary school students, I refers to instructional practices, and Co refers to the teaching and learning of mathematics. These three components served as the foundation for formulating the main research question. By using the PICO framework, the researchers ensure that the review remains focused on synthesizing relevant empirical evidence within a clearly defined educational context.

Systematic Search Strategy

To ensure this, the SLR conducted a comprehensive search, and the researchers implemented a systematic search strategy guided by three main processes: identification, screening, and eligibility. These stages form the core structure of the PRISMA approach and are essential in filtering relevant studies from a vast pool of academic literature. The identification phase involves locating potentially relevant articles through predefined databases using specific keywords. The screening process then removes duplicates and evaluates titles and abstracts for relevance. Finally, the eligibility phase involves a thorough review of full-text articles against inclusion and exclusion criteria to ensure only high-quality, relevant studies are included in the final analysis.

Identification

The researchers identified several main keywords based on the formulated research question. Three keywords were selected: storytelling, narrative pedagogy, and secondary school. These keywords were then expanded by incorporating synonyms, related terms, and variations of the main keywords, such as narration, story-based learning, high school students, and adolescents. Using these refined keywords, the researchers conducted two main search processes: manual searching (via handpicking and snowballing) and advanced database searching with structured search strings. These search strings were applied across two major academic

databases: Scopus and Web of Science (WoS) (see the search string in Table 1). In addition to Scopus and WoS, the researchers also included the education-focused database ERIC to enhance the search’s comprehensiveness. In the ERIC researchers’ practice manual, handpicking is mentioned as a searching technique. From these three sources, a total of 1,124 articles were initially retrieved and advanced to the next stage of the SLR process: screening.

Table 1. Search String

Database	Search string
Scopus	(TITLE-ABS-KEY (“storytelling” OR “narrative approach*” OR “story-based learning” OR “narrative technique*” OR “story-driven instruction” OR “digital storytelling” OR “oral storytelling” OR “educational storytelling” OR “narrative pedagogy”)) AND (TITLE-ABS-KEY (“secondary school*” OR “high school*” OR “middle school*” OR “lower secondary” OR “upper secondary” OR “secondary education” OR “teenage student*” OR “adolescent learner*” OR “school-aged youth”)) AND PUBYEAR > 2020 AND PUBYEAR < 2025 AND PUBYEAR > 2020 AND PUBYEAR < 2025 AND (LIMIT-TO (DOCTYPE, “ar”)) AND (LIMIT-TO (LANGUAGE, “English”)) AND (LIMIT-TO (SUBJAREA, “SOCI”)) AND (LIMIT-TO (EXACTKEYWORD, “Storytelling”))
WoS	TS=(“storytelling” OR “narrative approach*” OR “narrative technique*” OR “story-based learning” OR “narrative pedagogy” OR “story-driven instruction” OR “digital storytelling” OR “oral storytelling” OR “educational storytelling”) AND TS=(“secondary school*” OR “high school*” OR “lower secondary” OR “upper secondary” OR “middle school*” OR “secondary education” OR “teenage student*” OR “adolescent learner*” OR “school-aged youth”)

Source: Own elaboration

Screening

Screening is the second stage of the systematic search strategy and establishes clear criteria for selecting articles. This step is essential for two main reasons: first, to reduce the number of articles that need to be reviewed in depth, and second, to ensure that only articles relevant to the SLR topic are included. In this study, three primary screening criteria were applied. First, only articles published between 2021 and 2025 were selected to ensure currency and relevance. Second, only journal articles were included, excluding other publication types such as conference proceedings, book chapters, and reports. Third, only articles published in English were considered to maintain consistency in language and interpre-

tation. Based on this screening process, 1,058 articles were excluded, leaving 66 to proceed to the next stage: eligibility.

Eligibility

Eligibility is the second-level screening process that ensures each selected article is truly relevant to the research question and the study's objectives. In this stage, the researchers carefully reviewed the titles and abstracts of the shortlisted articles. During this process, a total of 35 articles were excluded for two main reasons: (1) the articles did not clearly discuss the impact of storytelling in learning, and (2) the focus was primarily on digital storytelling, rather than traditional storytelling, which is the main emphasis of this SLR. The remaining 31 articles were then carried forward to the quality appraisal stage for further evaluation (Table 2).

Table 2. Screening and Eligibility Criteria

Publication timeline	2021-2025
Document type	Journal articles
Language	English
Focus study	Impact of storytelling on secondary students' learning
Types of data	Primary

Source: Own elaboration

Quality Appraisal

Quality appraisal is an important process as SLR emphasizes the quality of the selected article. For this purpose, six quality criteria proposed by Abouzahra et al. (2020) were referred to (Table 3). For each criterion, three options of answer were available, namely yes (representing 1 mark), partially (representing 0.5 marks), and no (representing 0 marks). An article will be considered of sufficient quality and included in the SLR if its total score exceeds 3.0 (50%). Based on the process, one article was excluded because it failed to meet at least 3.0 marks in the article's quality assessment. A total of 30 articles were brought to the next steps.

Table 3. Quality Appraisal Criteria

Research design	Assessment criteria
Qualitative	QA1. Is the purpose of the study clearly stated? QA2. Is the interest and usefulness of the work clearly presented? QA3. Is the study methodology clearly established? QA4. Are the concepts of the approach clearly defined? QA5. Is the work compared and measured against other similar works? QA6. Are the limitations of the work clearly mentioned?

Source: Own elaboration

Data Extraction and Analysis

12 |

The authors carefully reviewed the remaining selected articles. Guided by the established research question, the first author extracted relevant qualitative data primarily from the results and discussion sections, while additional sections were referred to as needed for contextual clarity. Although many of the reviewed articles employed quantitative or mixed-method designs, the focus of this SLR remained qualitative; the descriptive statements and narrative interpretations were extracted, rather than raw numerical or statistical outputs. All extracted data were systematically organized and tabulated, and subsequently validated by a second reviewer to ensure data relevance and minimize potential selection bias.

This SLR adopts a qualitative synthesis approach, which aligns with the perspectives of Dixon-Woods et al. (2005), who argued that complex educational phenomena are best understood through diverse methodological lenses. Accordingly, the present review employed inductive thematic analysis, a method well-suited for interpreting meaning from varied forms of narrative data (Flemming et al., 2019). Thematic analysis, as defined by Braun and Clarke (2006), enables researchers to identify recurring patterns of meaning in qualitative data, especially pertinent in educational contexts where experiences, perceptions, and reflective practices are central.

The study refers to the thematic analysis process outlined by Braun and Clarke (2006). Initially, the authors immersed themselves in the dataset to become familiar with its content. This was followed by the generation of initial codes, which were then organized into potential themes and subthemes. Through iterative discussion and refinement, five main themes—Cognitive Impact,

Affective and Emotional Engagement, Language and Communication Development, Identity Formation and Cultural Understanding, and Pedagogical Innovation and Classroom Practice—and 15 subthemes were finalized. Several preliminary subthemes were removed to maintain coherence and clarity. Definitions and conceptual boundaries for each theme were established, and the thematic framework was validated by two independent experts in educational pedagogy and curriculum design. The following sections report and discuss the results according to the themes and subthemes summarized in Tables 4 and 5.

Table 4. Themes and Subthemes

Cognitive Impact	CUDL = Conceptual Understanding & Deep Learning CRT = Critical & Recursive Thinking DSR = Data & Scientific Reasoning
Affective and Emotional Engagement	ME = Motivation & Enjoyment EEC = Empathy & Emotional Connection CCI = Classroom Climate & Interest
Language and Communication Development	LEW = Literacy & Expressive Writing VFOS = Verbal Fluency & Oral Skills CNS = Creative Narratives & Storytelling
Identity Formation and Cultural Understanding	CVA = Civic & Ethical Awareness CHI = Cultural & Heritage Identity NII = Narrative Identity & Inclusion
Pedagogical Innovation and Classroom Practice	CLD = Curriculum & Lesson Design PT = Participatory Tools SCA = Student-Centered Assessment

Source: Own elaboration

Table 5. Developed Themes and Subthemes

n.º	Author and year	Cognitive Impact			Affective and Emotional Engagement			Language and Communication Development			Identity Formation and Cultural Understanding			Pedagogical Innovation and Classroom Practices		
		CUDL	CRT	DSR	ME	EEC	CCI	LEW	VFOS	CNS	CEA	CHI	NIU	CLD	PT	SCA
1	Aquilina et al. (2024)	✓	✓		✓			✓		✓						
2	Besser (2021)	✓			✓		✓	✓		✓						✓
3	Boscolo (2024)	✓	✓		✓	✓		✓		✓		✓	✓			✓
4	Casanova et al. (2021)	✓	✓		✓	✓	✓	✓		✓		✓	✓	✓		✓
5	Choudhary and Bakshi (2025)	✓	✓		✓	✓		✓		✓		✓	✓			✓
6	Dietiker et al. (2023)	✓			✓			✓		✓			✓			✓
7	Draves (2021)	✓			✓		✓									
8	Enciso et al. (2023)	✓	✓		✓	✓		✓		✓		✓	✓	✓		
9	Fatchurahman et al. (2021)	✓						✓		✓		✓	✓	✓		✓
10	Hecht (2023)	✓				✓						✓	✓	✓		

(continued)

n.º	Author and year	Cognitive Impact			Affective and Emotional Engagement			Language and Communication Development			Identity Formation and Cultural Understanding			Pedagogical Innovation and Classroom Practices		
		CUDL	CRT	DSR	ME	EEC	CCI	LEW	VFOS	CNS	CEA	CHI	NII	CLD	PT	SCA
11	Heinemeyer et al. (2024)	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
12	Irmayanti et al. (2024)	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
17	Izci and Çetinkaya (2024)	✓		✓		✓			✓	✓			✓			
13	Kindenberg (2024)	✓	✓										✓			
14	Lu et al. (2024)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
15	Maharaj-Sharma (2022)	✓	✓	✓		✓		✓					✓			✓
16	Nicchioti (2024)	✓	✓		✓			✓			✓	✓	✓			✓
18	Reyes (2024)	✓	✓		✓			✓					✓			✓
19	Sadati and Mitchell (2021)					✓			✓	✓	✓	✓	✓			
20	Sanei et al. (2023)	✓	✓	✓	✓	✓			✓	✓			✓	✓		✓
21	Setyarini et al. (2021)		✓		✓			✓	✓							
22	Storm and Jones (2021)	✓	✓		✓	✓	✓	✓				✓	✓			✓

(continued)

n.º	Author and year	Cognitive Impact			Affective and Emotional Engagement			Language and Communication Development			Identity Formation and Cultural Understanding			Pedagogical Innovation and Classroom Practices		
		CUDL	CRT	DSR	ME	EEC	CCI	LEW	VFOS	CNS	CEA	CHI	NII	CLD	PT	SCA
23	Su and Yang (2023)	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	
24	Sum et al. (2023)	✓											✓			✓
25	Syam et al. (2024)	✓		✓	✓	✓	✓	✓					✓			✓
26	Tripon (2024)	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓			✓
27	Tuveriet al. (2024)	✓			✓		✓		✓							
28	Türkben and Karaca (2023)	✓			✓	✓		✓	✓	✓			✓			✓
29	Yañez et al. (2025)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
30	Zhong and Craig (2025)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓

Source: Own elaboration

Results

Background of the Selected Studies

Between 2021 and 2022, the United States topped the list with three articles in 2021 and one in 2022. Two articles were from Indonesia in 2021, and one each from Canada and Spain that year. In 2022, one article was from the United Kingdom, while Trinidad and Tobago also provided one article, together with the US contribution.

In 2023 and 2025, its international coverage was expanded. In 2023, the two American articles led the way, followed by China, Iran, Turkey, Malaysia, and the USA–Colombia collaboration, each submitting one article. In 2024, Italy became the leader with three articles, followed by Indonesia and China each submitting two articles, while the UK, Chile, Romania, Sweden, and Malta each submitted a single article. Up to 2025, the contributions were made up of two by Chile, one by China (with US collaboration), one by the US (with China collaboration), and one by India. Overall, from 2021 to 2025, the US contributed 6 articles, Indonesia 4, China 3, Italy 3, and others 1 or 2.

| 17

Developed Themes

Based on the thematic analysis, the following five main themes were identified: Cognitive Impact, Affective and Emotional Engagement, Language and Communication Development, Identity Formation and Cultural Understanding, and Pedagogical Innovation and Classroom Practice. The five core domains are influenced by storytelling in education. These main themes were further divided into 15 subthemes that reflect specific educational outcomes observed in secondary school students.

Theme 1: Cognitive Impact

Conceptual Understanding & Deep Learning

Storytelling has proven especially effective in enhancing conceptual understanding in science and STEM education. For instance, Maharaj-Sharma (2022) and Tuveri et al. (2024) demonstrated that storytelling improved students' under-

standing of complex physics concepts, such as gravitational waves. Sanei et al. (2023), Su and Yang (2023), and Syam et al. (2024) found that narratives helped students translate abstract climate science and AI processes into more relatable, understandable forms. Zhong and Craig (2025) showed that narrative activities increased clarity in comprehending scientific topics, while Yañez et al. (2025) used robotic storytelling to support abstraction and cross-curricular understanding. Lu et al. (2024) observed that storytelling enabled pre-service teachers to develop mental models of sustainability, and Draves and Vargas (2021) noted that personal stories deepened understanding of sustainability. Sum et al. (2023) further contributed to this domain by showing how integrating storytelling with visual representations enhanced students' conceptual understanding of fractions.

18 | In mathematics education, storytelling has helped bridge abstract concepts with everyday experiences. Irmayanti et al. (2024), Nicchiotti (2024), and Reyes and Zúñiga (2024) highlighted how math storytelling made abstract ideas more accessible and meaningful. Dietiker et al. (2023) found that narrative structures bridged students' intuitive experiences with formal mathematical thinking, while Fatchurahman et al. (2021) demonstrated that segmented stories improved comprehension and sequencing. Sum et al. (2023) also emphasized the effectiveness of storytelling in visualizing part-whole relationships in fractions.

In language, literature, and writing contexts, Aquilina et al. (2024) revealed that students internalized Shakespearean themes through creative retelling, and Türkben and Karaca (2023) found that narrative structures deepened understanding of literary components. Besser et al. (2022) noted how students mastered academic content through the creation of educational podcasts.

Storytelling also supported social justice and identity exploration. Choudhary and Bakshi (2025), Enciso et al. (2023), and Storm and Jones (2021) documented how narrative engagement enabled deep analysis of gender, power, and global justice issues. Casanova et al. (2021) found that multimodal storytelling helped pre-service teachers understand equity concepts, while Tripon (2024) linked STEM theory to real-world experiences of gender inclusion in rural contexts. In interdisciplinary and cultural contexts, Hecht (2023) emphasized the role of Indigenous narratives in deep learning, and Izci and Çetinkaya (2024) showed how personal storytelling facilitated understanding of climate adaptation. Kindenberg (2024) used narrative strategies to help students engage with historical complexity, and Heinemeyer et al. (2024) reported that storytelling enhanced deep learning in geography and environmental topics.

Critical & Recursive Thinking

Storytelling fostered critical and recursive thinking by encouraging students to revisit, reflect on, and refine their ideas across diverse learning contexts. In language- and narrative-based learning, Boscolo et al. (2024), Enciso et al. (2023), and Sanei et al. (2023) demonstrated that iterative storytelling practices, such as revising superhero plots and constructing layered narratives, cultivate critical thinking and questioning. Aquilina et al. (2024) highlighted how reconstructing Shakespearean stories required deep analytical reflection, while Choudhary and Bakshi (2025) showed that student drafts and peer critiques nurtured iterative self-awareness. Casanova et al. (2021) reported that reflective storytelling helped reveal personal biases and positionality.

In mathematics and STEM contexts, narrative approaches also nurtured logical reasoning. Setyarini et al. (2021) found that the PMI (*Pengaruh Model Intelektual* or influence of the intellectual model) storytelling technique supported recursive oral expression, while Irmayanti et al. (2024), Nicchiotti (2024), and Reyes and Zúñiga (2024) reported that math stories allowed students to reflect on multi-step problem-solving processes. Heinemeyer et al. (2024) observed that storytelling in math encouraged flexible thinking and scaffolded logical structures. Similarly, Maharaj-Sharma (2022) demonstrated that story-based revisions in physics activated inferential thinking and conceptual reflection.

For themes related to identity, ethics, and civic learning, storytelling played a key role in prompting personal reflection. Lu et al. (2024), Storm and Jones (2021), and Tripon (2024) reported that narrative Role Play Games (RPGs), teacher storytelling, and reflective journals encouraged students to re-evaluate their roles, values, and assumptions, especially regarding issues such as gender and rural inclusion. Zhong and Craig (2025) emphasized that critical reflection on narrative structure and meaning boosted students' recursive thinking skills. In interdisciplinary and coding contexts, Yañez et al. (2025) found that students refined their computational thinking by revising robotic code to match evolving narrative goals. Kindenberg (2024) showed that rewriting historical narratives promoted recursive evaluation and deeper historical understanding.

Data Scientific Reasoning

Storytelling proved a powerful tool for enhancing data interpretation and scientific reasoning, especially in STEM and AI learning environments. Sanei et al. (2023), Syam et al. (2024), and Zhong and Craig (2025) showed that embedding

datasets and factual content into stories enabled students to collect, analyze, and logically structure information as they constructed scientific arguments. Izci and Çetinkaya (2024) and Lu et al. (2024) highlighted how environmental and sustainability narratives helped students make sense of abstract scientific data and connect it to real-world contexts. Heinemeyer et al. (2024) embedded climate data into a narrative-based inquiry, thereby enhancing students' scientific reasoning and decision-making processes.

In AI and computational thinking, Su and Yang (2023) demonstrated that stories supported logical understanding of how AI systems operate, while Yañez et al. (2025) used computational storytelling to engage students in algorithmic sequencing and narrative-based decision-making. The AI literacy curriculum further emphasized this benefit, as storytelling encouraged students to critically interpret data and explore socio-scientific issues, thereby deepening their understanding of complex technical systems. Maharaj-Sharma (2022) illustrated how physics storytelling linked scientific discoveries with logical patterns of reasoning, fostering a deeper conceptual grasp of scientific inquiry.

20 | Theme 2: Affective and Emotional Engagement

Motivation & Enjoyment

Storytelling significantly enhanced student motivation and enjoyment across various disciplines by making learning more relatable, engaging, and imaginative. In STEM and science education, Draves and Vargas (2021), Sanei et al. (2023), Syam et al. (2024), and Tuveri et al. (2024) found that storytelling increased students' interest and excitement in learning science and climate-related content. Su and Yang (2023) and Zhong and Craig (2025) reported that students found AI and computational tasks more engaging when delivered through stories, while Yañez et al. (2025) demonstrated that combining robotics with playful narratives heightened student effort and enthusiasm. Lu et al. (2024) observed increased enjoyment among pre-service teachers when sustainability was taught through creative stories. Similarly, Storm and Jones (2021) and Tripon (2024) showed that role-play and service-learning narratives encouraged voluntary participation and meaningful learning.

In the domain of language and creative writing, Setyarini et al. (2021) showed how the PMI storytelling technique made speaking tasks more enjoyable, and Aquilina et al. (2024) found that artistic retellings fostered sustained engagement.

Students also demonstrated enthusiasm for math storytelling, as noted by Dietiker et al. (2023), Irmayanti et al. (2024), Nicchiotti (2024), and Reyes and Zúñiga (2024), who reported that integrating narratives into math instruction reduced anxiety and made abstract topics more approachable. Besser et al. (2021) also highlighted how podcast storytelling fostered excitement and ownership.

Creative storytelling activities further sparked imagination and joy in writing tasks, as seen in the work of Choudhary and Bakshi (2025), Enciso et al. (2023), and Türkben and Karaca (2023), who used superhero narratives to energize students. Casanova et al. (2021) showed that storytelling not only benefited learners but also fostered fulfillment and creativity among pre-service teachers. Finally, Boscolo et al. (2024) confirmed that storytelling approaches consistently increased students' intrinsic motivation and joy in learning.

Empathy & Emotional Connection

Storytelling emerged as a powerful medium for cultivating empathy and emotional connection across learning domains. In the context of social justice and marginalized voices, Casanova et al. (2021), Hecht (2023), and Sadati and Mitchell (2021) highlighted how narratives evoked empathy by humanizing the experiences of Indigenous communities, sexual and gender-based violence survivors, and oppressed groups. Enciso et al. (2023) and Storm and Jones (2021) found that students developed deeper emotional engagement through characters inspired by real struggles and roleplay activities that connected them with marginalized identities. Similarly, Tripon (2024) reported that rural-based narratives fostered both empathy and social justice awareness, while Choudhary and Bakshi (2025) noted that resilience-centered storytelling nurtured compassionate responses to adversity.

In science and environmental education, storytelling helped students emotionally relate to global issues. Izcı and Çetinkaya (2024), Lu et al. (2024), and Sanei et al. (2023) found that narratives focusing on climate-affected communities and sustainability themes fostered students' empathy for distant realities. Su and Yang (2023) observed that AI-centered dilemmas elicited emotional reactions, while Maharaj-Sharma (2022) found that students empathized with characters portraying scientists and researchers. Syam et al. (2024) added that young learners connected emotionally to science through story-based explorations.

Character development and emotional storytelling were also key to building bonds. Boscolo et al. (2024), Yañez et al. (2025), and Zhong and Craig (2025)

highlighted that students felt emotionally connected through collaborative story construction and relatable character dilemmas. Türkben and Karaca (2023) emphasized that personalized storytelling strengthened deep emotional attachment and classroom rapport.

Even in mathematics learning, Irmayanti et al. (2024) showed that embedding characters into math stories fostered emotional trust and engagement, thereby bridging the affective and cognitive domains. Overall, these studies confirm that storytelling fosters authentic emotional resonance, encouraging students to connect with people, content, and contexts on a deeper level.

Classroom Climate & Interest

22 | Storytelling positively transformed the classroom climate, fostering inclusive, interactive, and supportive learning environments. Several studies have demonstrated that storytelling practices promote collaboration and engagement. Tuveri et al. (2024) observed heightened attentiveness and participation in story-integrated science lessons, while Syam et al. (2024) reported improved teamwork and interaction in STEM classrooms. Lu et al. (2024) and Yañez et al. (2025) noted that collaborative storytelling activities enhanced student engagement and contributed to a positive, vibrant classroom atmosphere. Tripon (2024) found that service-learning narratives inspired community involvement and fostered a shared sense of purpose.

A major benefit of storytelling was its role in creating inclusive and affirming spaces. Storm and Jones (2021) used RPGs to build classrooms that affirmed diverse identities and encouraged mutual respect. Irmayanti et al. (2024) and Zhong and Craig (2025) reported that narrative tasks created a welcoming environment, especially for anxious or hesitant learners. Casanova et al. (2021) also found that storytelling facilitated honest conversations around race and identity, enriching classroom inclusivity.

Additionally, storytelling helped reduce anxiety and encouraged emotional comfort and expression. Sadati and Mitchell (2021) described how storytelling offered a safe space for open dialogue, while Besser et al. (2021) reported that podcast storytelling increased student comfort and reduced performance anxiety. Draves and Vargas (2021) added that connecting personal experiences to science through stories deepened students' interest and fostered emotional engagement. Heinemeyer et al. (2024) concluded that storytelling transformed the classroom into a trusting, collaborative learning community.

Theme 3: Language and Communication Development

Literacy & Expressive Writing

Storytelling significantly enhanced students' literacy and expressive writing skills, promoting creativity, coherence, and subject integration across disciplines. In terms of narrative development, Boscolo et al. (2024), Enciso et al. (2023), and Storm and Jones (2021) showed that writing and extending multimodal stories, character journals, and narrative reflections helped build foundational literacy and expressive capacity. Students practiced narrative techniques and voice through character-driven writing, while Aquilina et al. (2024) found that dramatic retelling encouraged rich expressive writing.

Several studies emphasized the impact of subject-integrated writing. In science and STEM, Maharaj-Sharma (2022), Su and Yang (2023), and Syam et al. (2024) used story-based writing to help students explain AI systems, reflect on scientific understanding, and describe physical phenomena such as gravitational waves. Lu et al. (2024) highlighted improvements in persuasive and structured writing about sustainability, while Tripon (2024) used journaling and interviews to promote critical reflection. In math contexts, Dietiker et al. (2023), Irmayanti et al. (2024), and Nicchiotti (2024) demonstrated that math-focused storytelling improved vocabulary, comprehension, and expressive fluency. Heinemeyer et al. (2024) added that reflective writing enhanced students' articulation of mathematical reasoning.

To develop clarity, coherence, and structured expression, narrative tools such as the PMI method (Setyarini et al., 2021), story coding (Yañez et al., 2025), and podcast scripting (Besser et al., 2021) supported sentence fluency, logical progression, and structured storytelling. Fatchurahman et al. (2021) found that experience-based writing enriched narrative fluency, while Casanova et al. (2021) and Choudhary and Bakshi (2025) emphasized coherence, equity, and voice in teacher-developed narrative writing. Türkben and Karaca (2023) further highlighted gains in fluency and sentence construction.

Verbal Fluency & Oral Skills

Storytelling activities meaningfully enhanced verbal fluency and oral communication skills by encouraging students to speak clearly, confidently, and reflectively across different learning contexts. Through oral storytelling and presentation, Su

and Yang (2023), Yañez et al. (2025), and Zhong and Craig (2025) found that students developed stronger public speaking, articulation, and self-expression by presenting narratives and engaging in story-based discussions. Setyarini et al. (2021) showed that the PMI storytelling strategy improved spoken logic and clarity, while Besser et al. (2021) emphasized that podcast performances fostered structured oral communication.

Collaborative storytelling also supported dialogue and spoken fluency. Lu et al. (2024) observed that collaborative scripting and storytelling improved students' verbal interaction and fluency, and Tripon (2024) used interviews and participatory videos to provide authentic speaking practice. Casanova et al. (2021) found that classroom discussions centered on social themes helped learners articulate complex ideas with greater precision.

In subject-specific applications, Irmayanti et al. (2024) demonstrated that storytelling allowed students to verbalize their mathematical reasoning more effectively, strengthening their ability to explain abstract concepts aloud.

Creative Narratives & Storytelling

24 | Storytelling as a creative practice empowered students to develop original, expressive narratives that integrated academic content, real-life issues, and imaginative thinking. In subject-integrated storytelling, Izci and Çetinkaya (2024), Syam et al. (2024), and Tuveri et al. (2024) demonstrated how students interpreted scientific and environmental content through original stories. Sanei et al. (2023) and Su and Yang (2023) engaged students in creating data-driven, AI-focused narratives that blend fact and fiction, while Lu et al. (2024) used sustainability themes to stimulate original storytelling. Dietiker et al. (2023) and Irmayanti et al. (2024) explored how students framed mathematical thinking using characters, plots, and fictional problem scenarios.

Numerous studies highlighted co-creation and original storytelling as core pedagogical strategies. Boscolo et al. (2024), Storm and Jones (2021), and Zhong and Craig (2025) emphasized how collaborative story-building supported the articulation of complex concepts and fostered student agency. Yañez et al. (2025) applied story coding in robotics to promote narrative structure and creativity, while Tripon (2024) facilitated storytelling clubs that connected personal experiences with social advocacy. Fatchurahman et al. (2021) added that healing narratives improved storytelling competence in reflective contexts.

Several projects adopted multimodal and genre-diverse storytelling. Enciso et al. (2023) had students create superhero narratives tied to real-world issues, while Aquilina et al. (2024) promoted creative retellings of Shakespeare. Türkben and Karaca (2023) fostered narrative skills through structured creative writing, and Besser et al. (2021) integrated podcast scripting with storytelling frameworks. Casanova et al. (2021) and Choudhary and Bakshi (2025) encouraged the use of multimodal forms such as video stories, speculative fiction, and memoirs to deepen narrative expression. Heinemeyer et al. (2024) further supported creativity by having students reimagine environmental solutions through collaborative storytelling.

Theme 4: Identity Formation and Cultural Understanding

Civic & Ethical Awareness

Storytelling served as a compelling pedagogical tool for developing students' civic and ethical awareness, prompting reflection on real-world issues, moral responsibility, and social justice. In narratives focused on social justice and values, Boscolo et al. (2024), Enciso et al. (2023), and Storm and Jones (2021) presented students with civic dilemmas, superhero-based advocacy, and justice-oriented stories that encouraged critical engagement with themes of equity, discrimination, and moral complexity. Sadati and Mitchell (2021) used stories to deepen students' ethical understanding of sexual and gender-based violence, while Choudhary and Bakshi (2025) introduced narratives around migration and inequality to cultivate civic responsibility. Casanova et al. (2021) highlighted how storytelling helped teachers reflect on systemic oppression and education's role in promoting justice.

Other studies emphasized climate justice and environmental ethics. Heinemeyer et al. (2024), Izci and Çetinkaya (2024), and Lu et al. (2024) found that co-authored climate stories empowered students as ethical actors in environmental issues and encouraged civic participation in ecological advocacy. Similarly, Tripon (2024) used service-learning narratives to promote gender equity and social awareness through community engagement.

In contexts involving technology and civic discourse, Su and Yang (2023) and Zhong and Craig (2025) reported that storytelling enabled students to explore complex questions related to AI fairness, societal dilemmas, and ethical decision-making. Yañez et al. (2025) found that themes of inclusion and cooperation were naturally embedded in students' narrative creations. Maharaj-Sharma (2022)

showed that ethical dimensions of scientific discovery could be illuminated through narrative framing, linking civic thought to scientific understanding.

Cultural & Heritage Identity

Storytelling provided a vital platform for students and educators to explore, express, and preserve cultural and heritage identity, fostering deeper connections to tradition, place, and community. In studies emphasizing Indigenous and traditional narratives, Hecht (2023) underscored the importance of preserving Indigenous voices in educational storytelling, while Nicchiotti (2024) and Sadati and Mitchell (2021) highlighted how traditional and resistance-based stories conveyed cultural heritage and gendered experiences. Casanova et al. (2021) supported this by encouraging pre-service teachers to reflect on their own cultural identities through story creation.

26 | Several works demonstrated how subject-based learning was enriched through cultural integration. Irmayanti et al. (2024) and Nicchiotti (2024) used cultural narratives to make mathematics more relatable for students from diverse backgrounds. Su and Yang (2023) embedded local perspectives within AI-based storytelling, while Lu et al. (2024) promoted the inclusion of cultural traditions in sustainability narratives, linking environmental learning with heritage.

For many learners, storytelling also functioned as a medium for expressing local and personal cultural identity. Enciso et al. (2023) and Tripon (2024) showed how students explored community struggles and rural experiences to foster appreciation for their cultural roots. Heinemeyer et al. (2024) incorporated regional knowledge into climate storytelling, and Yañez et al. (2025) encouraged students to include cultural narratives even in computational tasks, demonstrating the flexibility of storytelling in honoring identity across disciplines.

Narrative Identity & Inclusion

Storytelling emerged as a transformative approach to support narrative identity formation and inclusion, allowing students and teachers to explore, affirm, and reconstruct their identities while amplifying marginalized voices. Enciso et al. (2023) and Hecht (2023) illustrated how stories highlighted the erasure of Indigenous narratives and helped students negotiate complex identities through superhero and community-based narratives. Sadati and Mitchell (2021) and Storm and Jones (2021) showcased how queer-inclusive and gender-aware storytelling practices enabled students to express and reconstruct personal identities,

while Boscolo et al. (2024) used community-rooted stories to help learners see themselves represented within the curriculum.

Personalized storytelling within academic contexts further supported identity development. Su and Yang (2023), Syam et al. (2024), and Zhong and Craig (2025) demonstrated how learners embedded personal perspectives and local identity markers in AI, science, and narrative writing tasks. Irmayanti et al. (2024) found that math storytelling reshaped negative self-perceptions, helping students build confidence. Fatchurahman et al. (2021) emphasized storytelling's role in post-trauma identity reconstruction, while Nicchiotti (2024) highlighted reflection-driven identity support through narrative math expression.

Teachers also used storytelling to explore and construct professional identities. Casanova et al. (2021) and Lu et al. (2024) reported that teachers crafted inclusive educator identities through reflective story engagement. Tripon (2024) worked with rural women and STEM students to co-construct empathetic narratives about becoming educators, while Choudhary and Bakshi (2025) encouraged inclusive reflection through personal storytelling. Heinemeyer et al. (2024) and Yañez et al. (2025) found that collaborative narrative construction promoted ownership and supported inclusive identity formation among both learners and educators.

Theme 5: Pedagogical Innovation and Classroom Practice

Curriculum & Lesson Design

Storytelling played a significant role in reimagining curriculum and lesson design, offering a rich framework to integrate academic content with creativity, inclusivity, and real-world relevance. Many studies emphasized cross-curricular storytelling integration. Boscolo et al. (2024), Sanei et al. (2023), and Zhong and Craig (2025) provided structured frameworks that embedded storytelling across science, technology, and the humanities. Izci and Çetinkaya (2024), Su and Yang (2023), and Yañez et al. (2025) demonstrated how narrative techniques were used in climate, AI, and coding lessons to create cohesive, cross-disciplinary learning experiences. Lu et al. (2024) and Syam et al. (2024) similarly showed how STEM and teacher education modules were designed around storytelling. Maharaj-Sharma (2022) and Sum et al. (2023) applied narrative strategies specifically to physics and mathematics to improve comprehension and engagement with complex concepts.

In terms of culturally relevant and equity-centered curricula, Hecht (2023) critiqued curricular structures that marginalize Indigenous narratives, while Enciso et al. (2023), Sadati and Mitchell (2021), and Storm and Jones (2021) developed storytelling activities that reflected students' cultural realities and emotional well-being. Casanova et al. (2021) and Choudhary and Bakshi (2025) designed equity-focused instruction through multimodal narratives and civic role-play, whereas Kindenberg (2024) advocated the use of historical narratives for more engaging history instruction.

Several studies proposed pedagogical planning models that use storytelling as a central instructional tool. Dietiker et al. (2023), Irmayanti et al. (2024), Nicchiotti (2024), and Reyes and Zúñiga (2024) all presented ways to embed storytelling into mathematics instruction, with models focused on narrative aesthetics, recursive thinking, and early math learning. Fatchurahman et al. (2021) structured the lesson phases around healing narratives, while Türkben and Karaca (2023) developed a story-based framework to improve writing instruction. Tripon (2024) combined storytelling and service-learning to support rural teacher preparation, offering both pedagogical and social development. Heinemeyer et al. (2024) proposed storytelling as a transformative alternative to teacher-centered instruction, promoting co-constructed learning experiences.

Participatory Tools

Storytelling was amplified through participatory tools, offering learners immersive, interactive platforms for co-constructing knowledge and expressing creativity. In the realm of technology-enhanced storytelling, Heinemeyer et al. (2024), Sanei et al. (2023), and Su and Yang (2023) incorporated coding environments, multimedia, and digital platforms to help students present science, climate, and AI concepts through story. Yañez et al. (2025) used Bee-Bot robots and storytelling applications to merge early coding skills with narrative construction, providing a playful, integrative learning experience.

Student co-creation and agency were central in several initiatives. Enciso et al. (2023) facilitated storytelling through community workshops co-developed with artists, encouraging collaborative authorship and participatory learning. Casanova et al. (2021) empowered pre-service teachers to create multimodal narratives using video, voiceovers, and collage, offering diverse pathways for storytelling expression that reflected personal and social identities.

These participatory storytelling tools helped students actively engage with content, exercise creativity, and take ownership over their learning processes while integrating technology in meaningful, accessible ways.

Student-Centered Assessment

Storytelling opened pathways for student-centered assessment, emphasizing growth, creativity, and reflection over traditional testing methods. Many studies used narrative artifacts and creative outputs as core assessment tools. Boscolo et al. (2024), Sanei et al. (2023), Su and Yang (2023), and Zhong and Craig (2025) evaluated student understanding through story creation, coding narratives, and creative participation. Similarly, Dietiker et al. (2023) and Maharaj-Sharma (2022) assessed depth of mathematical and conceptual understanding through narrative-based outputs. Besser et al. (2021) and Yañez et al. (2025) integrated peer/self-review and multimodal products such as robotics storytelling and podcasts into their evaluation frameworks.

Others focused on formative, reflective, and personalized evaluation strategies. Irmayanti et al. (2024), Storm and Jones (2021), and Tripon (2024) employed reflective dialogue, journaling, and interviews to monitor student progress, while Lu et al. (2024) emphasized peer feedback and self-reflection as ongoing assessment. Sum et al. (2023) embedded assessment within storytelling activities to observe thinking processes and address misconceptions in real time. Fatchurahman et al. (2021) and Nicchiotti (2024) also included emotional and reasoning-based evaluations using storytelling products.

Some projects designed alternative, creative assessment models grounded in narrative. Türkben and Karaca (2023) used rubrics and portfolios to measure creativity and skill growth, while Reyes and Zúñiga (2024) assessed students' logical reasoning via story structures. Casanova et al. (2021) and Choudhary and Bakshi (2025) aligned assessments with justice, ethical reflection, and narrative clarity, and Heinemeyer et al. (2024) replaced traditional exams entirely with reflections and peer evaluations.

Discussion

This SLR contains contradictory evidence on the effects of storytelling on education. It is indeed the case that on one level, such a large body of research like Casanova et al. (2021), Heinemeyer et al. (2024), Lu et al. (2024), Storm and Jones

(2021), Su and Yang (2023), Yañez et al. (2025), and Zhong and Craig (2025) report revolutionary potential of storytelling as a pedagogy. This research consistently identifies its impact at the cognitive, affective, linguistic, cultural, and pedagogical levels. For example, Yañez et al. (2025) present empirical evidence on how storytelling can simultaneously influence critical thinking, cultural identity formation, emotional activation, and innovation in the classroom. Lu et al. (2024) and Zhong and Craig (2025) demonstrate that collaborative and digital storytelling practices are effective tools for intellectual development and cultural learning, while Casanova et al. (2021) highlight their incorporation into classroom pedagogy to facilitate reflective and participatory learning. In summary, these research studies indicate that, when systematically integrated, storytelling enhances learners' intellectual, emotional, social, and cultural well-being and provides long-term curricular and educational renewal.

30 | Alternatively, a second set of studies illustrates more limited or broken influences, as seen in Draves and Vargas (2021), Hecht (2023), Kindenberg (2024), Maharaj-Sharma (2022), Sadati and Mitchell (2021), Setyarini et al. (2021), and Tuveri et al. (2024). These are informative, though more niche contributions focused on individual elements of storytelling, such as cognitive development (Draves & Vargas, 2021; Hecht, 2023) or affective engagement (Sadati & Mitchell, 2021; Setyarini et al., 2021) that do not generalize to cultural or educational settings. Kindenberg (2024), for example, situates storytelling in mathematics education, and Maharaj-Sharma (2022) in science, but the effects are individually context-specific and less generalizable. While these studies legitimize the potential of story, their scope remains limited, consistently emphasizing narrative as an add-on rather than a core pedagogy.

These contrasting findings underscore the importance of holistic integration in leveraging storytelling's potential. The studies demonstrate that storytelling is most effective when designed to address multiple domains of cognition, affect, communication, identity, and pedagogy in an interconnected manner. Conversely, the yellow-coded studies highlight the risks of applying storytelling in isolation, which may result in partial or fragmented outcomes. This comparison suggests that the transformative promise of storytelling lies not in its fragmented use but in its systemic adoption as a multidimensional educational practice capable of shaping thinking, nurturing emotions, developing language, fostering cultural identity, and driving pedagogical innovation.

In relation to the SLR themes, the evidence corroborates that cognitive development and emotional engagement (Themes 1 and 2) are continuously developed when storytelling is employed holistically. In contrast, language and communication development (Theme 3) thrives through dialogic and collaborative storytelling methods. Identity formation and cultural sensitivity (Theme 4) become most salient when stories are placed in social and historical contexts, and pedagogical innovation (Theme 5) is most evident when storytelling is combined with digital technology, reflective practices, and learner-centeredness. The findings thus validate that the learning potential of storytelling is optimally realized when all five themes are taken together, offering a holistic approach to classroom implementation and further research.

The SLR provides strong evidence that storytelling is a successful pedagogical approach in secondary education. Through thematic synthesis of findings from diverse research, five overarching areas of impact were identified: Cognitive Impact, Affective and Emotional Engagement, Language and Communication Development, Identity Formation and Cultural Understanding, and Pedagogical Innovation and Classroom Practice. These themes were then outlined in 15 subthemes that describe the complex effects of storytelling on students' academic understanding, emotional connection, communication skills, identity, and instructional design.

The review revealed that storytelling not only constructs rich conceptual knowledge and critical thinking but also connects students, fosters empathy, and generates inclusive school communities. Storytelling facilitates literacy and verbal communication, shapes cultural awareness, and inspires student-centered measurement. Moreover, participatory narrative technologies are emerging as creative means of engaging students in meaningful, authentic learning processes.

While it holds benefits, the literature also suggests challenges, including the need for teachers' systematic training, culturally responsive materials, and assessment alignment. Thus, while it has great potential, its use must be context-specific and pedagogically sound. This review still demonstrates the use of storytelling as an instructional pedagogy that can significantly enhance secondary school learners' learning and calls for further research to optimize its use across multiple educational settings.

Recommendations for Future Research

This review highlights the diverse benefits of storytelling in enhancing secondary students' learning outcomes across cognitive, affective, linguistic, identity, and pedagogical domains. However, several research gaps warrant further investigation. First, longitudinal studies are recommended to examine the sustained impact of storytelling on students' learning retention, critical thinking, and identity formation. Second, there is a need for more empirical studies in diverse cultural and linguistic settings, particularly in under-researched regions such as Southeast Asia and Africa, to understand how local narratives influence students' engagement and learning.

Future research should also compare storytelling with other pedagogical approaches (e.g., inquiry-based learning or flipped classrooms) to determine their relative effectiveness across different learning outcomes. Additionally, quantitative measures and mixed-method designs should be expanded to include standardized assessment tools that evaluate storytelling's effect on academic achievement and metacognitive skills.

32 | The integration of digital storytelling tools, including AI-driven platforms and multimedia apps, also requires deeper investigation, particularly regarding accessibility, student autonomy, and digital literacy. Lastly, more attention should be given to teachers' professional development in storytelling pedagogy, with a focus on training models that build narrative competence and culturally responsive teaching practices.

Suggestions for Policymakers

Given the overwhelming evidence from contemporary research, educational policymakers are urged to embed storytelling as a core pedagogical strategy across curricula, from STEM to the humanities. Storytelling has demonstrated cognitive benefits, including enhanced conceptual understanding, recursive thinking, and scientific reasoning. It fosters affective engagement, boosting student motivation, empathy, and classroom inclusivity. Furthermore, it supports language development, including expressive writing, verbal fluency, and narrative creativity, which are critical for 21st-century communication skills.

Storytelling also plays a vital role in identity formation, helping students connect with cultural heritage, reflect on civic values, and build inclusive learning

environments. In terms of pedagogical innovation, storytelling encourages student-centered assessment, promotes participatory learning through digital tools, and offers frameworks for equitable, interdisciplinary lesson design.

Therefore, it is recommended that national curriculum standards incorporate storytelling across subject areas; teacher training programs include narrative-based instructional strategies; and assessment policies expand to include story-based evaluations. Support for digital storytelling infrastructure and community-driven narrative projects should also be prioritized to amplify the voices of local and marginalized communities. Embracing storytelling not only improves learning outcomes but also nurtures a more empathetic, inclusive, and reflective generation of learners.

References

- Abouzahra, A., Sabraoui, A., & Afdel, K. (2020). Model composition in Model Driven Engineering: A systematic literature review. *Information and Software Technology*, 125, 106316. <https://doi.org/10.1016/j.infsof.2020.106316>
- Anrasiyana, A. (2021). Teaching Narrative Text by Using Story Telling Method at Ninth Grade Students. *JournEEL (Journal of English Education and Literature)*, 3(1), 1. <https://doi.org/10.51836/journeel.v3i1.181>
- Aquilina, G., Iacono, U. D., Gabelli, L., Picariello, L., Scettri, G., & Termini, G. (2024). “Romeo and Juliet: A Love out of the Shell”: Using Storytelling to Address Students’ Misconceptions and Promote Modeling Competencies in Science. *Education Sciences*, 14(3), 239. <https://doi.org/10.3390/educsci14030239>
- Besser, E. D., Blackwell, L. E., & Saenz, M. (2021). Engaging Students Through Educational Podcasting: Three Stories of Implementation. *Technology Knowledge and Learning*, 27(3), 749–764. <https://doi.org/10.1007/s10758-021-09503-8>
- Boscolo, A., Lippiello, S., & Pierri, A. (2024). Storytelling as a skeleton to design a learning unit: a model for teaching and learning optics. *Education Sciences*, 14(3), 218. <https://doi.org/10.3390/educsci14030218>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Casanova, D., Alsop, G., & Huet, I. (2021). Giving away some of their powers! Towards learner agency in digital assessment and feedback. *Research and*

Practice in Technology Enhanced Learning, 16(1). <https://doi.org/10.1186/s41039-021-00168-6>

Choudhary, A., & Bakshi, R. (2025). Shaping the Future: Strategies for Cultivating values among secondary school students. *MIER Journal of Educational Studies Trends & Practices*, 260–276. <https://doi.org/10.52634/mier/2025/v15/i1/2835>

Dietiker, L., Riling, M., Singh, R., Nieves, H. I., & Barno, E. (2023). The aesthetic effects of a new lesson design approach: Mathematical stories. *The Journal of Educational Research*, 116(1), 33–47. <https://doi.org/10.1080/00220671.2023.2182264>

Dixon-Woods, M., Agarwal, S., Jones, D., Young, B., Sutton, A. (2005). Synthesising qualitative and quantitative evidence: a review of possible methods. *Journal of Health Services Research & Policy*, 10(1), 45–53. <https://doi.org/10.1177/135581960501000110>

Draves, T. J., & Vargas, J. E. (2021). “I made myself fit in”: Johnny’s story. *Journal of Research in Music Education*, 70(1), 4–21. <https://doi.org/10.1177/00224294211001876>

34 | Enciso, P., Krone, B., & Solange, G. (2023). Re-Imagining Community and School through Youth and Artists’ Critical Superhero Storytelling. *Social Sciences*, 12(6), 363. <https://doi.org/10.3390/socsci12060363>

Fatchurahman, M., Setiawan, M. A., & Karyanti, K. (2021). The development of group healing storytelling model in multicultural counselling services in Indonesian schools: Examination of disciplinary cases. *The Education and Science Journal*, 23(4), 157–180. <http://doi.org/10.17853/1994-5639-2021-4-157-180>

Flemming, K., Booth, A., Garside, R., Tunçalp, Ö., & Noyes, J. (2019). Qualitative evidence synthesis for complex interventions and guideline development: clarification of the purpose, designs and relevant methods. *BMJ Global Health*, 4(Suppl 1), e000882. <https://doi.org/10.1136/bmjgh-2018-000882>

Gunawardena, M., & Brown, B. (2021). Fostering Values Through Authentic Storytelling. *The Australian Journal of Teacher Education*, 46(6), 36. <https://doi.org/10.14221/ajte.2021v46n6.3>

Hecht, M. (2023). Exclusion (or what we risk losing). *Cultural Studies of Science Education*, 18(1), 195–204. <https://doi.org/10.1007/s11422-023-10153-8>

- Heinemeyer, C., Reason, M., Quatermass, N., Wood, N., & Adekola, O. (2024). Mutual learning through participatory storytelling: Creative approaches to climate adaptation education in secondary schools. *Research in Education*, 118(1), 87–107. <https://doi.org/10.1177/00345237241236191>
- Higgins, J. P. T., Altman, D. G., Gøtzsche, P. C., Jüni, P., Moher, D., Oxman, A. D., Savovic, J., Schulz, K. F., Weeks, L., Sterne, J. A. C., Cochrane Bias Methods Group, & Cochrane Statistical Methods Group. (2011). The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. *The BMJ*, 343, d5928. <https://doi.org/10.1136/bmj.d5928>
- Irmayanti, M., Chou, L., & Anuar, N. N. B. Z. (2024). Storytelling and math anxiety: a review of storytelling methods in mathematics learning in Asian countries. *European Journal of Psychology of Education*, 40(1). <https://doi.org/10.1007/s10212-024-00927-1>
- Izci, S. M., & Çetinkaya, B. (2024). The impact of digital storytelling for children during pediatric day surgery on anxiety and negative emotional behaviors: Randomized controlled trial. *Journal of Pediatric Nursing*, 77, e231–e241. <https://doi.org/10.1016/j.pedn.2024.04.034>
- Kim, D., Coenraad, M., & Park, H. R. (2021). Digital storytelling as a tool for reflection in virtual reality projects. *Journal of Curriculum Studies Research*, 3(1), 101. <https://doi.org/10.46303/jcsr.2021.9>
- Kindenberg, B. (2024). Navigating narrative and analysis: students' mediation of historical content through storytelling. *Language and Education*, 1–20. <https://doi.org/10.1080/09500782.2024.2362907>
- Lockwood, C., Munn, Z., & Porritt, K. (2015). Qualitative research synthesis. *International Journal of Evidence-Based Healthcare*, 13(3), 179–187. <https://doi.org/10.1097/xeb.0000000000000062>
- Lu, R., Lin, H. K., Yang, Y., & Chen, Y. (2024). Integrating urban mining concepts through AI-Generated Storytelling and Visuals: Advancing Sustainability Education in Early Childhood. *Sustainability*, 16(24), 11304. <https://doi.org/10.3390/su162411304>
- Maharaj-Sharma, R. (2022). Using storytelling to teach a topic in physics. *Education Inquiry*, 15(2), 227–246. <https://doi.org/10.1080/20004508.2022.2092977>

- Mead, H. M.-M. (2002). *The effects of storytelling on student writing: A tool for the English language learner classroom*. <https://scholarworks.lib.csusb.edu/cgi/viewcontent.cgi?article=3160&context=etd-project>
- Mohamed Shaffril, H. A., Samsuddin, S. F., & Abu Samah, A. (2021). The ABC of systematic literature review: The basic methodological guidance for beginners. *Quality & Quantity*, 55(4). <https://doi.org/10.1007/s11135-020-01059-6>
- 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>
- Nicchioti, B., Donatiello, A., & Bianco, G. (2024). A narrative approach to foster the construction of recursive thinking in high school students. *Education Sciences*, 14(4), 350. <https://doi.org/10.3390/educsci14040350>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, n71. <https://doi.org/10.1136/bmj.n71>
- Rahmawati, I. N. (2014). *Teaching Speaking Through Storytelling*. <http://repository.upi.edu/16159/>
- Reyes, M. (2024). *Rhetoric and Storytelling within the U.S. Asylum Process: Shelter Rhetorics* (1st ed.). Routledge. <https://doi.org/10.4324/9781003349693>
- Sadati, S. M. H., & Mitchell, C. (2021). Narrative Imagination and Social Change: Instructors in agricultural colleges in Ethiopia address Sexual and Gender-Based Violence. *Educational Research for Social Change*, 10(2), 121–141. <https://doi.org/10.17159/2221-4070/2021/v10i2a8>
- Sanei, H., Kahn, J. B., Yalcinkaya, R., Jiang, S., & Wang, C. (2023). Examining How Students Code with Socioscientific Data to Tell Stories About Climate Change. *Journal of Science Education and Technology*, 33(2), 161–177. <https://doi.org/10.1007/s10956-023-10054-z>
- Setyarini, S., Gustine, G. G., Harto, S., & Muslim, A. B. (2021). Promoting Students' Critical Speaking Skill through Plus-Minus-Interesting (PMI) Strategies: A Case Study of Indonesian Junior High Schools. *3L the Southeast*

- Asian Journal of English Language Studies*, 27(3), 199–214. <https://doi.org/10.17576/31-2021-2703-13>
- Sharma, D. R. (2018). Action Research on Improving Students' Speaking Proficiency in Using Cooperative Storytelling Strategy. *Journal of NELTA Surkhet*, 5, 97. <https://doi.org/10.3126/jns.v5i0.19495>
- Smeda, N., Dakich, E., & Sharda, N. (2014). The effectiveness of digital storytelling in the classrooms: a comprehensive study. *Smart Learning Environments*, 1(1). <https://doi.org/10.1186/s40561-014-0006-3>
- Steinfadt, S. J. (2013). *Improving 21st century literacy skills and student engagement by integrating digital storytelling across the curriculum*. <https://scholarworks.uni.edu/cgi/viewcontent.cgi?article=1232&context=grp>
- Storm, S., & Jones, K. (2021). Queering critical literacies: disidentifications and queer futurity in an afterschool storytelling and roleplaying game. *English Teaching Practice & Critique*, 20(4), 534–548. <https://doi.org/10.1108/etpc-10-2020-0131>
- Su, J., & Yang, W. (2023). AI literacy curriculum and its relation to children's perceptions of robots and attitudes towards engineering and science: An intervention study in early childhood education. *Journal of Computer Assisted Learning*, 40(1), 241–253. <https://doi.org/10.1111/jcal.12867>
- Sum, E. S. W., Wong, M. K. Y., Yip, A. Y. T., & Seah, W. T. (2023). Using Storytelling to Develop Fraction Concepts with Culturally and Linguistically Diverse Learners. *International Journal of Science and Mathematics Education*, 22(3), 633–655. <https://doi.org/10.1007/s10763-023-10388-5>
- Syam, H., Loebis, I. A., Nurwiatin, N., Srisudarso, M., & Irwansyah, D. (2024). Student Perception of the Effectiveness of the Storytelling Method in English Learning: Quantitative Research with a Focus on Reading Skills. *International Journal of Language and Ubiquitous Learning*, 2(1). <https://doi.org/10.70177/ijlul.v2i1.767>
- Tripon, C. (2024). Bridging Horizons: Exploring STEM students' perspectives on Service-Learning and storytelling activities for community engagement and gender equality. *Trends in Higher Education*, 3(2), 324–341. <https://doi.org/10.3390/higheredu3020020>

- Tuveri, M., Steri, A., & Fadda, D. (2024). Using storytelling to foster the teaching and learning of gravitational waves physics at high-school. *Physics Education*, 59(4), 045031. <https://doi.org/10.1088/1361-6552/ad4b87>
- Türkben, T., & Karaca, H. (2023). The Effect of Creative Writing Practices Integrated with Story-Based Learning Approach on Secondary School Students' Writing Attitudes and Development of Creative Writing Skills. *TED EĞİTİM VE BİLİM*, 48(213). <https://doi.org/10.15390/eb.2023.11832>
- Wandhe, P. (2024). Unleashing the Magic: The Power of Storytelling in Academics. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4727196>
- Yañez, A. G. B., Alonso-Fernández, C., & Fernández-Manjón, B. (2025). Video Games That Educate: Breaking Gender Stereotypes and Promoting Gender Equality with a Serious Video Game. *Information*, 16(3), 199. <https://doi.org/10.3390/info16030199>
- Zhong, L., & Craig, C. J. (2025). A Narrative Inquiry into the Cultivation of a Classroom Knowledge Community in a Chinese Normal University. *Education Sciences*, 15(7), 911. <https://doi.org/10.3390/educsci15070911>