

Digital Storytelling in Language Learning: A Bibliometric Analysis

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ABSTRACT

Digital storytelling is a powerful tool in language learning that combines narrative, multimedia, and technology to improve learner engagement, motivation, and communication skills. This study employs bibliometric analysis to examine the trend of digital storytelling in language learning between 2010 and 2025. By reviewing publications related to digital storytelling indexed in the Elsevier Scopus database, we collected 431 articles. The analysis uses VOSviewer to visualize co-authorship patterns, citation networks, keyword co-occurrence, and thematic clusters. The statistics show that the trend has significantly increased from 2010 until June 2025, aligning with the rise of digital tools in education. Key contributing countries include the United States, China, and Spain, while the most cited articles focus on research projects adapting literary works into cinematic formats. This paper highlights the three most frequently used keywords in the research: "digital storytelling," "students," and "e-learning." Thematic mapping reveals that the United States occupies a central and dominant position in the global digital storytelling research network. This bibliometric research provides a macro-level overview of the field, offering valuable insights for researchers, educators, and policymakers aiming to leverage digital storytelling in language learning.

Keywords: bibliometric analysis, digital storytelling, language learning

INTRODUCTION

Information and communication technology (ICT) has revolutionised education worldwide in recent years. Online learning and the use of digital technology in the classroom have become essential, especially during the COVID-19 pandemic in 2020 (Tian & Mohd Suki, 2023). To ensure a smooth and efficient learning process, both instructors and students must now acquire proficiency in digital skills. Digital storytelling is a language learning technique that is becoming more popular. To make language learning more interesting and dynamic for students, digital storytelling combines text, audio, video, and graphics (Isaacs et al., 2024). With digital storytelling, students may contribute their own tales in addition to learning the language, which boosts their enthusiasm and creativity (Avcı & Kasimi, 2023). Furthermore, students may quickly collaborate and produce digital tales with the aid of technology like Google Docs and smartphone apps (Nik, 2024).

Using digital storytelling in language instruction also helps students learn all aspects of communication, including speaking, listening, reading, and writing, in a more relevant and meaningful setting (Murad et al., 2023; Xu et al., 2021). Furthermore, digital storytelling encourages students to work in groups via project-based and collaborative learning, which improves their technical and social abilities (Krasova, 2024). Activities that make use of video and audio editing software can provide students with an enjoyable and participatory opportunity to learn pronunciation and intonation (Wu, 2020; Lim, 2022).

Comprehensive bibliometric studies are still few, despite several empirical research studies showing the success of digital storytelling in language acquisition. Identifying research trends, prominent authors, active countries, and study topics in this field is facilitated by bibliometric studies (Tian & Mohd Suki, 2023). Furthermore, this methodology helps identify unexplored research gaps. However, bibliometric research specifically focusing on digital storytelling in the context of language acquisition has been limited in the last

five years (Avcı & Kasimi, 2023). Because there aren't enough bibliometric studies on digital storytelling for language acquisition, it's hard for academics and educators to know how the subject is developing and what gaps need to be filled in the future.

Using information from Scopus database, this work attempts to close this gap by conducting a bibliometric analysis of papers related to digital storytelling in language acquisition. The study aims to support the development of digital storytelling applications in 21st-century language teaching and will also identify research trends, key authors, and gaps in the field. This paper examines the research trend of digital storytelling in language learning through an analysis of Scopus-indexed publications. It addresses various research questions, such as:

RQ1: What is the research trend of digital storytelling in language learning according to years?

RQ2: What are the most cited articles, and who writes the most cited articles?

RQ3: Who and how much has been published about the authors and affiliated organisations?

RQ4: What are the research themes in digital storytelling in language learning?

RQ5: What are citation countries regarding storytelling in language learning?

LITERATURE REVIEW

Digital storytelling, which combines multimodal literacy, creativity, and digital fluency, has become a powerful way to teach languages. Over the past decade, it has transitioned from an innovative pedagogical approach to a flourishing research domain that mirrors global advancements in digital education. Recent studies (Avcı, 2023; Özkaya, 2022; Behforouz et al., 2023; Alkhudiry & Al-Ahdal, 2021) indicate that digital storytelling integrates linguistic, cognitive, and technical skills within authentic communicative contexts, aligning with contemporary educational frameworks.

While there is widespread consensus that digital storytelling enhances student engagement and skill acquisition, a meticulous synthesis indicates that outcomes differ according to school level and cultural context. For instance, Alkhudiry and Al-Ahdal (2021) discovered that digital storytelling's scaffolded story activities, which promote oral performance, markedly enhanced the speaking fluency and pronunciation of EFL learners. Conversely, Mangen et al. (2022) found that, particularly for students with limited digital literacy, the cognitive demands of managing multimedia components can often hinder linguistic accuracy.

Likewise, Behforouz et al. (2023) confirmed enhancements in vocabulary and learner motivation among Omani EFL students; however, they emphasised that enduring outcomes depend on teacher assistance and digital access—factors often overlooked in prior research.

Moreover, recent studies suggest that while digital storytelling enhances writing and narrative skills, its impact on grammatical development and reading comprehension is less consistent. Ong (2023) observed measurable enhancements in the lexical range and narrative coherence of young learners, although it demonstrated limited advancement in syntactic control. These discrepancies suggest that the effectiveness of digital storytelling differs based on age, proficiency, and pedagogical methods. These conflicting results underscore the necessity for further longitudinal and comparative studies, particularly in under-represented domains and non-English-speaking contexts (Avcı & Kasimi, 2023; Yoon & Kim, 2021).

Bibliometric studies have recently provided meta-level insights into the development and structure of digital storytelling research. Avcı (2023) and Özkaya (2022) observed a notable increase in publications starting in 2015, highlighting clusters associated with multimodality, digital pedagogy, and language assessment. Yoon and Kim (2021) note that the research has expanded beyond Western settings to include Asia and the Middle East. Bibliometric mapping also reveals methodological fragmentation; for example, many scholars rely on descriptive case studies or small samples that limit generalisability (Avcı & Kasimi, 2023). This fragmentation

underscores the importance of using bibliometric methods to identify recurring themes, key works, and new gaps by consolidating scattered data.

Bibliometric analysis is particularly suitable for evaluating digital storytelling, as it facilitates a systematic and quantitative evaluation of the field's evolution over time, across geographies, and among disciplines. Bibliometrics, unlike narrative reviews, finds conceptual clusters, co-authorship patterns, and citation networks that show how digital storytelling research is related to larger trends in digital literacy and language learning (Avcı, 2023; Wang et al., 2024). For instance, Wang et al. (2024) demonstrated that bibliometric mapping can

monitor transitions from tool-based research that emphasises applications such as Storybird or Animoto to learner-centred frameworks that foster creativity and identity development. Understanding the history of digital storytelling and the evolution of evidence-based instructional innovation requires these kinds of insights.

Even though there is more interest, there are still gaps in methodological rigour and theoretical foundations. Many recent studies remain exploratory, focusing on short-term learning objectives but neglecting transfer or long-term retention effects. Moreover, few studies examine the relationships between digital storytelling and sociocultural factors such as teacher preparedness, technological accessibility, and language background. Researchers can utilise bibliometric analysis to tackle these issues and pinpoint previously unexplored areas. This can help them build a more coherent research programme.

Recent research identifies digital storytelling as an innovative pedagogical approach that integrates digital literacy with language acquisition. However, varied methods and contradictory empirical evidence indicate the need for integrative analysis. Bibliometric methods provide a rigorous lens for evaluating how research trends, collaborations, and theoretical developments in digital storytelling have unfolded globally. Through such an approach, this study aims to map the intellectual landscape of digital storytelling in language education and identify emerging directions that can advance both research and classroom practice

METHODOLOGY

Bibliometrics, as defined by Verbeek et al. (2022), involves collecting, organising, and analysing bibliographic data from scientific publications. In addition to basic statistics like journals, publication years, and author categorization, bibliometrics also encompasses advanced techniques like document co-citation analysis (Wu & Wu, 2017). An iterative process combining appropriate keywords, literature searches, and analysis is crucial to guarantee a good literature review, bibliography development, and realisation of trustworthy findings (Fahimnia et al., 2015). The part that follows covers search phrase adoption, first screening of search results, and search result refining. According to Meier (2011), a quality paper will include the impact factor from the Clarivate Analytics Journal Citation Reports (JCR).

Thus, the study focused on high-quality publications to explore the theoretical perspective on the research topic. Data from the Elsevier Scopus database was used to gather evidence. The database, established in 2004 by Elsevier, contains over 77.8 million entries post-1969, including peer-reviewed publications, trade journals, book series, and scientific events (Martins et al., 2022). With more than 11,000 publishers and 36,000 titles, the Scopus database is the biggest storehouse of peer-reviewed material (Rusly et al., 2019, quoted in Ida Rahayu & Anuar Shah, 2023).

Data search strategy

This study employed a screening sequence on June 4, 2025, to determine the search terms for article retrieval. It utilised a bibliometric approach to examine research trends in digital storytelling within language learning. The data analysis process encompassed a structured search strategy, rigorous data selection, descriptive statistical summaries, advanced visualisation techniques, and interpretation of the results to provide a holistic view of the scholarly landscape from 2010 to 2025. The data were retrieved from the Scopus database, using the search string `TITLE-ABS-KEY (digital AND storytelling AND language AND learning) AND PUBYEAR > 2009 AND PUBYEAR < 2026` and filtered for the publication years of 2015-2025. The

initial search yielded 382 articles. After refining the query to include articles published between 2010 and 2025, a total of 431 relevant articles were obtained from the Scopus database for this bibliometric study on digital storytelling in language learning.

Data analysis

We analysed data from the Scopus database (2010–2025) using VOSviewer software version 1.6.15. The datasets contained information on research publication year, title, author, journal, citation, and keyword in PlainText format. VOS clustering and mapping techniques were employed for analysis and map creation. The goal of VOSViewer, like that of the Multidimensional Scaling (MDS) method (Van Eck & Waltman, 2010), is to arrange objects in a two-dimensional space so that the distance between them accurately reflects their relatedness and similarity (Appio et al., 2014). In contrast to MDS, which is primarily concerned with computing similarity measures like cosine and Jaccard indexes, VOS uses a more appropriate method for normalising co-occurrence frequencies, such as the association strength (AS_{ij}), which is computed as:

$$AS_{ij} = \frac{C_{ij}}{W_i W_j}$$

W_iW_j

This is "in direct proportion to the ratio between the number of times i and j occur together as observed and the number of times they occur together as expected, assuming that they are statistically independent" (Van Eck & Waltman, 2010, p. 531). Consequently, VOSviewer uses this index to arrange objects on a map after minimising the weighted sum of squared distances between each item pair. It was established that the LinLog/modularity normalisation was used (Appio et al., 2016). Analyses such as keyword co-occurrence, citation analysis, and co-citation analysis were conducted, and patterns based on mathematical correlations were discovered by applying visualisation methods using VOSviewer to the data set.

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RESULTS AND DISCUSSION

RQ1: What is the research trend of digital storytelling in language learning according to years?

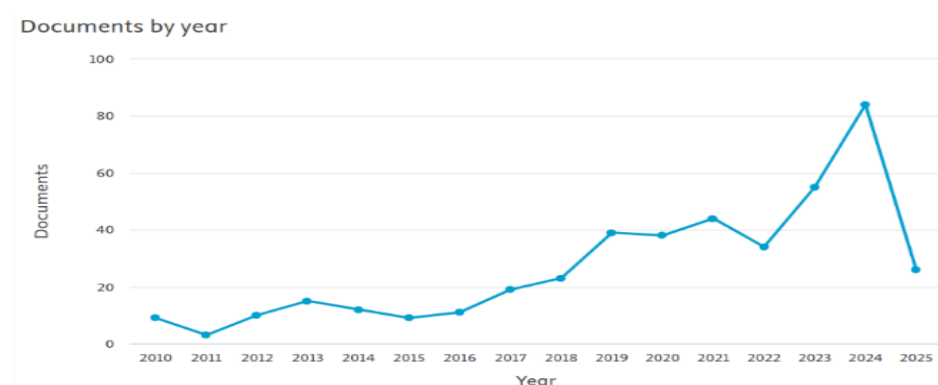


Figure 1 Document by years

Table 1 Document by years

Year	Documents
2025	26
2024	84
2023	55
2022	34
2021	44
2020	38
2019	39
2018	23
2017	19
2016	11
2015	9
2014	12
2013	15
2012	10
2011	3
2010	9

Figure 1 and Table 1 display the annual progression of articles on digital storytelling in language learning from 2010 to 2025. The data show a consistent increase in research output, with a notable surge in publications from 2018 onwards. The peak year for publications was 2024, with 84 articles. The research output increased from 2010 to 2025, with a peak in 2024, due to the widespread use of technology, particularly in teaching and learning. Therefore, the use of digital storytelling in language learning is highly encouraged and necessary to facilitate the teaching and learning process. Digital storytelling is a form of teaching and learning innovation that utilises technology. This claim is supported by Smeda et al. (2014), who stated that "Digital storytelling is an innovative pedagogical approach that can engage students in deep and meaningful learning." The year 2025, while still ongoing, had 26 documented articles at the time of analysis. The drop in 2025 may be due to the incomplete data for the year. The lowest number of publications was in 2011, with only 3 articles, likely reflecting the early stages of this research trend.

RQ2: What are the most cited articles, and who writes the most cited articles?



Table 2 Top 10 cited by author

Cites	Authors	Title	Year	Source	Volume	Issue	Cites PerYear
108	Y.T.C. Yang	Digital storytelling as an interdisciplinary project to improve students' English speaking and creative thinking	2022	Computer Assisted Language Learning	35	4	36
95	K. Hava	Exploring the role of digital storytelling in student motivation and satisfaction in EFL education	2021	Computer Assisted Language Learning	34	7	23.75
74	N. Parsazadeh	Integrating Computational Thinking Concept Into Digital Storytelling to Improve Learners' Motivation and Performance	2021	Journal of Educational Computing Research	59	3	18.5
59	M. Pullimen	Children's literature to promote students' global development and wellbeing	2020	Health Promotion Perspectives	10	1	11.8
49	D. Bailey	Digital storytelling with chatbots: mapping L2 participation and perception patterns	2020	Interactive Technology and Smart Education	18	1	9.8
45	V. Nair	A systematic review of digital storytelling in improving speaking skills	2021	Sustainability (Switzerland)	13	17	11.25
40	M. Kendrick	Digital Storytelling With Youth From Refugee Backgrounds: Possibilities for Language and Digital Literacy Learning	2022	TESOL Quarterly	56	3	13.33
38	J. Belda-Medina	Promoting inclusiveness, creativity and critical thinking through digital storytelling among EFL teacher candidates	2022	International Journal of Inclusive Education	26	2	12.67
38	J. Chen Hsieh	Digital storytelling outcomes, emotions, grit, and perceptions among EFL middle school learners: robot-assisted versus PowerPoint-assisted presentations	2023	Computer Assisted Language Learning	36	5	19
37	J.C. Liang	A robot-based digital storytelling approach to enhancing EFL learners' multimodal storytelling ability and narrative engagement	2023	Computers and Education	201		18.5

Table 2 displays the ten most cited works on "digital storytelling in language learning," with a focus on adapting literary works into cinematic formats. The citation counts in the Scopus database, which range from 106 to 2, indicate that the authors of the ten most cited papers are associated with publications from the years 2020 to 2025. They became the top 10 most cited works because the titles of the works focused on the teaching of foreign languages, especially English. Thus, the need for digital storytelling is high as language encompasses these four skills: listening, speaking, writing, and reading. Digital storytelling is the easiest, fastest, and most enjoyable way to convey information and activities in the classroom. However, the top 10 most cited papers are from the years 2020 to 2023 only. The two years with the highest number of citations, 2022 and 2021, each have 3 citations, while 2023 and 2020 each have 2 citations.

The top 3 most cited articles are "Digital Storytelling as an Interdisciplinary Project to Improve Students' English Speaking and Creative Thinking" by Y.T.C. Yang (108 citations or equivalent to 36 citations per year in 2022), "Exploring the Role of Digital Storytelling in Student Motivation and Satisfaction in EFL Education" by K. Hava (95 citations or 23.78 citations per year in 2021), and "Integrating Computational Thinking Concept into Digital Storytelling to Improve Learners' Motivation and Performance" by N. Parsazaden (75 citations or 18.5 citations per year). They focus on English and motivation, specifically on how to encourage students to love English. All three refer to the use of technology in teaching and learning.

Besides that, the least cited paper with 37 citations, or 18.5 per year, was written by J.C. Liang, "A Robot-based Digital Storytelling Approach to Enhancing EFL Learners' Multimodal Storytelling Ability and Narrative Engagement," in 2023. It indicates that research in the field of storytelling is more focused on reflecting current needs based on digital technology. It became the least cited paper because the topic was more specific, and only certain people read and wanted to know about it. Although it is related to English, it is more focused on the system of usage, for example, robot based.

RQ3: Who and how much has been published about the authors and affiliated organisations?

Documents by author

Compare the document counts for up to 15 authors.

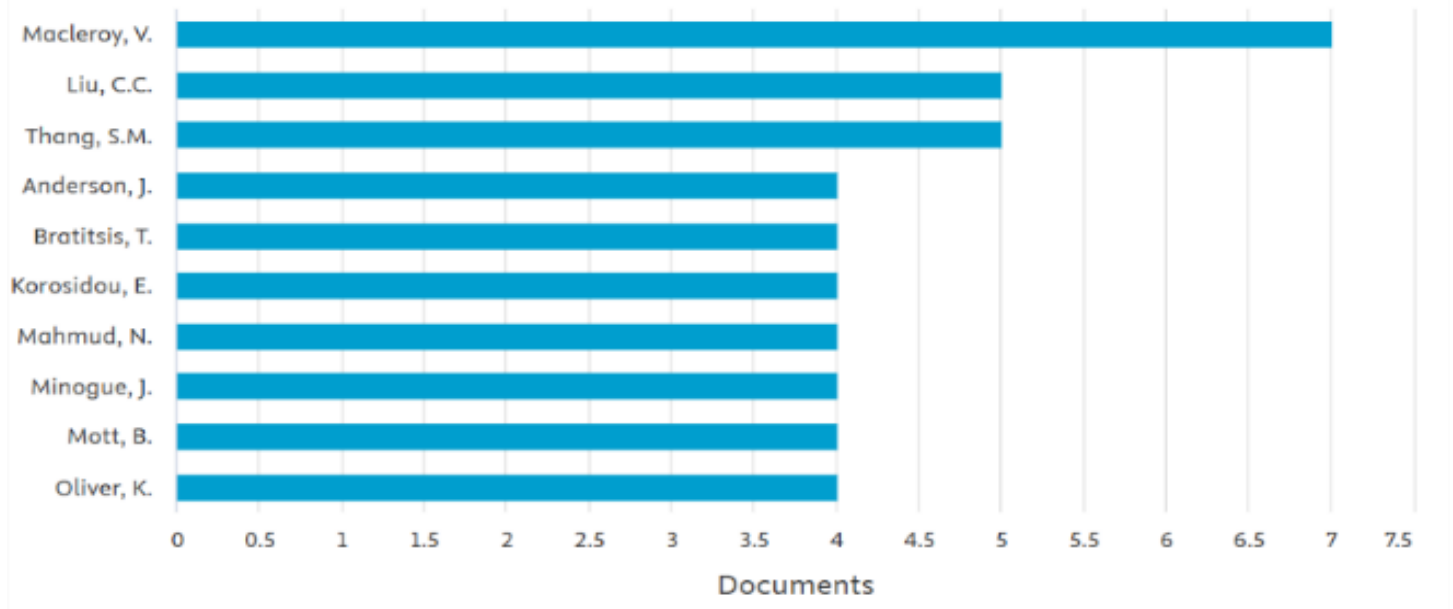


Figure 2 Top 10 authors

Figure 2 shows the most prolific contributors in the field. It shows the scholarly contributions in digital storytelling from 2010 to 2025. It displays the number of documents produced by different institutions, with a range of 4 to 7 articles. The top writer, Macleroy, V., published 7 articles, while Liu, C.C. and Thang, S.M. each published 5. The remaining 7 writers produced 4 articles each, with 4 from the US (Anderson, J., Minogue, J., Mott, B., and Oliver, K.), one from Malaysia (Mahmud, N.), and 2 from Greece (Bratitsis, T., and Korosidou, E.).

Documents by affiliation

Compare the document counts for up to 15 affiliations.

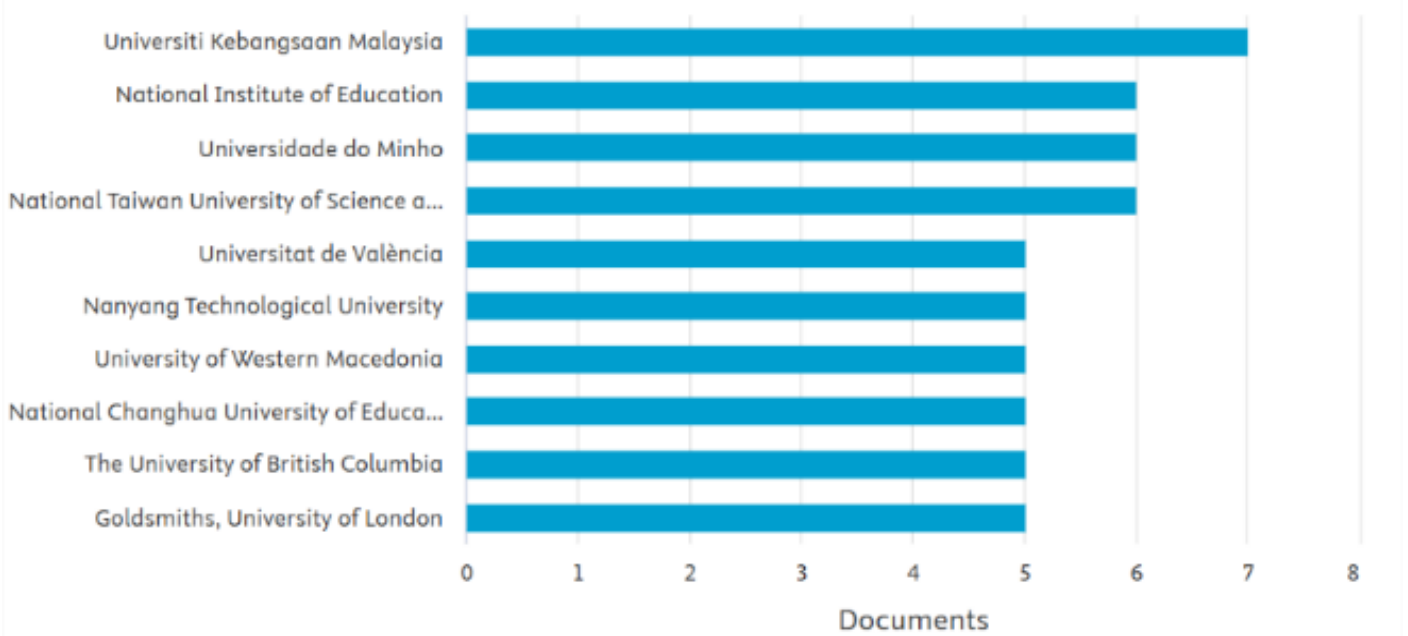


Figure 3 Top 10 affiliation

Figure 3 shows the top 10 affiliations linked to the study title theme selection. Universiti Kebangsaan Malaysia leads with 7 documents, indicating a strong focus on digital storytelling. The National Institute of Education, Universidade do Minho, and National Taiwan University of Science and Technology follow closely with 6 documents each. Other universities like Universitat de València, Nanyang Technological University, and University of Western Macedonia contributed 5 documents each, reflecting a global interest in digital storytelling in education. The presence of institutions from Asia and Europe highlights the widespread engagement with digital storytelling in pedagogy and technology, showcasing rapid advancements in the field.

RQ 4: What are the research themes in digital storytelling in language learning?

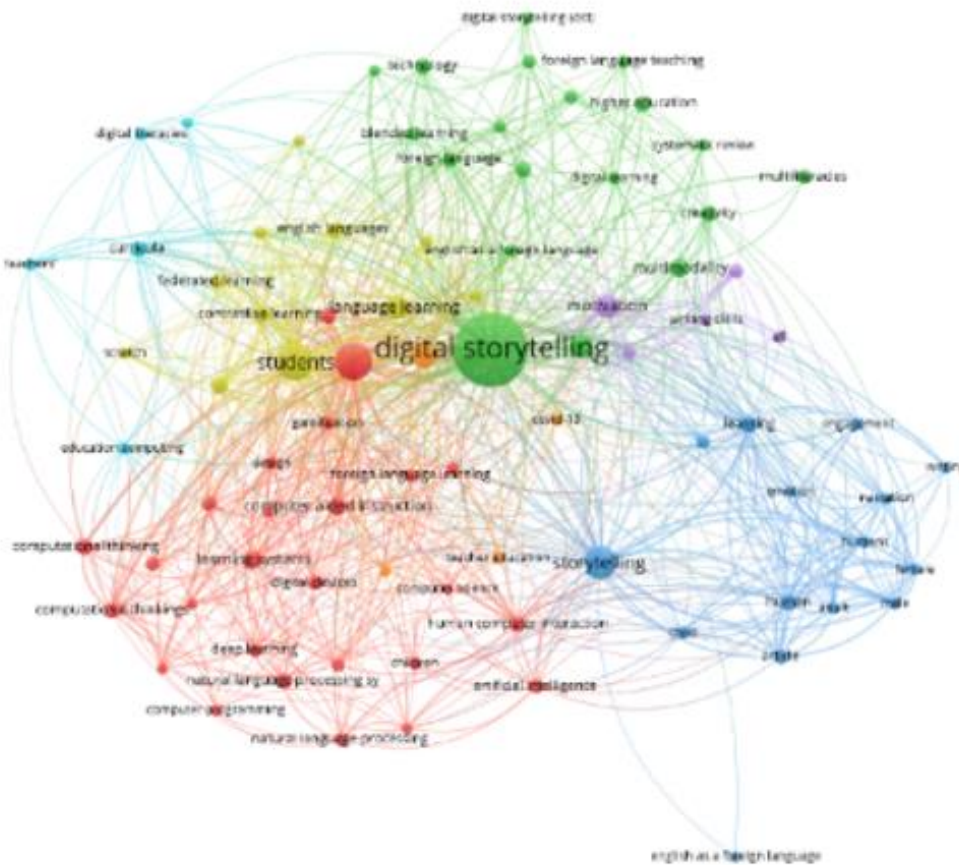


Figure 4 Keyword Network Visualisation

To gain a comprehensive understanding of the conceptual structure, a bibliometric mapping of the keywords used by the authors was conducted. Figure 4 illustrates the keyword-based collaboration network in digital storytelling within language learning. This network, analyzed using VOSviewer software, reveals seven distinct clusters of collaboration. Keyword co-occurrence analysis is an effective technique for examining knowledge frameworks and research trends, facilitating the comprehension of primary and secondary publications (Ozdemir & Goktas, 2021). In the illustration, the dimensions of each node denote the quantity of documents, whilst the lines connecting the nodes signify a relationship or co-occurrence between terms (Guo et al., 2019). A shorter line denotes a stronger association, while a longer line shows a weaker connection. Each cluster is a collection of terms, emphasising the most associated and reiterated keywords within the publications. Each cluster is denoted by distinct colours as follows:

- C1 (red): Cluster 1 is denoted by the red circle containing 85 keywords (artificial intelligence, augmented reality, children)
- C2 (green): Cluster 2 is represented by the green circle with 19 keywords (blended learning, creativity, critical thinking)
- C3 (dark blue): Cluster 3 is indicated by the blue circle with 13 keywords (adult, article, child)

- C4 (yellow): Cluster 4 is marked in yellow with 11 keywords (adversarial machine learning, collaborative learning, contrastive learning)
- C5 (purple): Cluster 5 depicted in purple contains 5 keywords (collaboration, elf, motivation)
- C6 (light blue): Cluster 6 depicted in light blue contains 5 keywords (curricula, digital literacies, education computing)
- C7 (orange): Cluster 7 is illustrated by the orange circle with 4 keywords (Covid 19, teacher education, teaching)

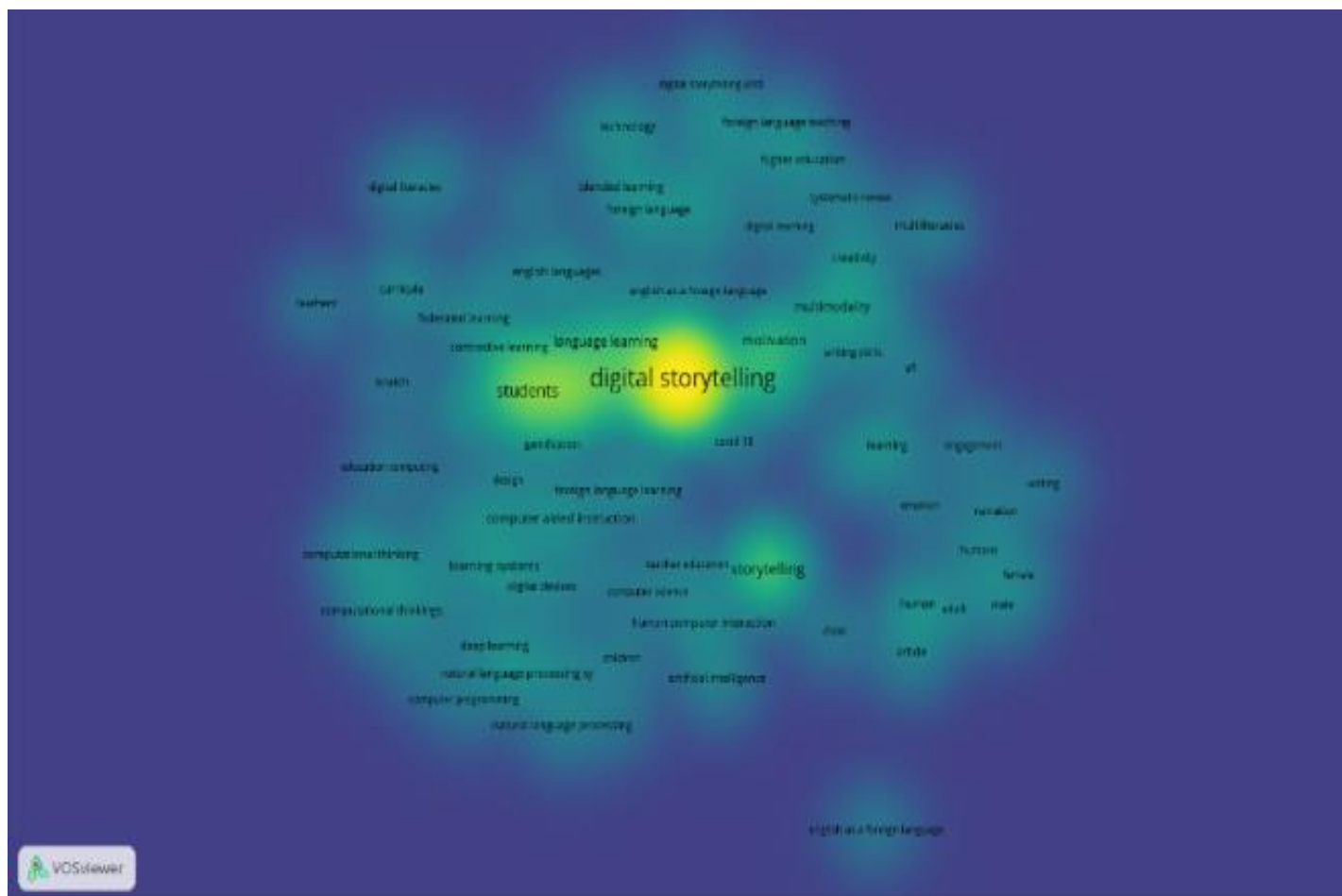


Figure 5 Density Visualisation

Figure 5 shows Density Visualisation created using VOSviewer, a software tool for analysing bibliometric networks. The heatmap highlights the core concept of "digital storytelling," which is the most prominent term in the network. Bright yellow areas indicate high frequency and co-occurrence of keywords, while darker regions are less relevant.

The visualisation shows that "digital storytelling" is closely linked with terms like "students," "language learning," "motivation," and "storytelling." This indicates that the concept is extensively researched in education, especially for improving student engagement and language acquisition. The proximity and prominence of these terms suggest a strong thematic relationship, demonstrating how digital storytelling is utilised as a teaching method to enhance learning.

The analysis also identifies secondary clusters related to "computer-aided instruction," "foreign language learning," "artificial intelligence," and "natural language processing." This suggests an interdisciplinary focus on the convergence of digital storytelling with emerging technologies in education and language instruction. Another notable observation is the presence of terms such as "emotion," "creativity," and "engagement," pointing to the affective and cognitive benefits of digital storytelling.

Additionally, terms like “Covid-19,” “blended learning,” and “online learning” reflect a timely research focus on remote education and the adaptation of storytelling techniques during the pandemic era. This contextual relevance shows the evolving nature of digital storytelling in response to global educational shifts.

In summary, the heatmap shows that digital storytelling is a diverse research area, mainly studied in language learning, educational technology, and student-centered teaching. It highlights the intersection of emotional, cognitive, and technological aspects, confirming its importance in education.

RQ5: What are citation countries regarding storytelling in language learning?

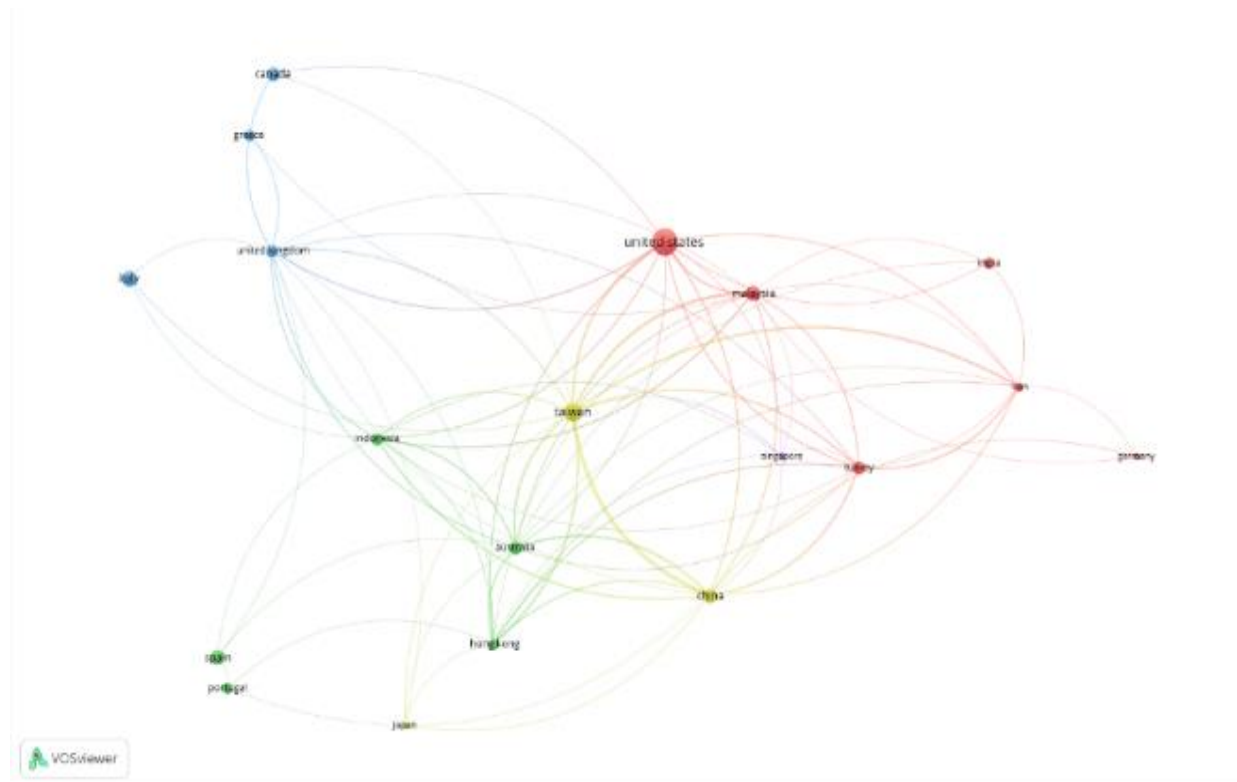


Figure 6 Citation network countries

Table 3 Quantitative network metrics: Key citation partners

Main Country	Key Citation Partners (Based on Relationship Strength)	Relationship Description
United States	Malaysia, United Kingdom, China, Australia, Taiwan	Exhibits robust and extensive citation connections with practically all major nations, serving as a vital center.
Malaysia	United States, China, Australia, Singapore	Exhibits a robust bilateral connection with the United States and maintains close affiliations with Asian nations and Australia.
China	Australia, United States, Taiwan, Hong Kong	Establishes a robust working partnership with Australia and maintains substantial citation connections with the United States.
Australia	China, United States, Indonesia, Taiwan	Establishes a robust working partnership with Australia and maintains substantial citation connections with the United States.
United Kingdom	United States, Greece, Italy, Spain	Functions as the nucleus of the citation network among European nations and maintains a crucial connection with the United States.

Figure 6 gives an understanding of the social structure, not only of authors, but also of the countries to which they belong. It is evident that the United States occupies a central and dominant position in the global digital storytelling research network. The size of its node and the density of its connections suggest that the U.S. is both a major contributor and a key collaborator with countries such as Canada, the United Kingdom, Italy, Portugal, and Spain. This highlights the country's influential role in shaping global research trends in the field.

The United States stands as the preeminent and most important nation in this domain. The largest node size and central location in the network indicate that research from this country has the highest citation count and serves as a principal reference for researchers from other countries. In addition to the United States, countries such as Malaysia, the United Kingdom, Australia, and China exhibit considerable influence with substantial node sizes. This signifies that these nations are significant contributors to the corpus of knowledge in this domain.

These findings indicate that the United States is the preeminent authority in research on digital storytelling for language acquisition. Malaysia has become a significant participant on the global stage, while China, Australia, and the United Kingdom function as prominent research centers in their respective areas.

The clusters indicate that the countries within them have a strong relationship in citation and research collaboration with each other through regional and international cooperation. The presence of these clusters suggests that researchers are inclined to reference works from nations with which they have geographical or intellectual proximity. The summary is as follows:

- Red Cluster: Led by the United States and Malaysia, this cluster shows strong cross-continental citation links.
- Green Cluster: Centered around China and Australia, this cluster indicates a close-knit collaborative network among countries in the Asia-Pacific region.
- Blue Cluster: Led by the United Kingdom, this cluster primarily consists of European countries, signalling a regional research focus in Europe.

Figure 7 summarises the strength of citation relationships between the most influential countries based on the thickness of the connecting lines in the network visualization. The link strength represents the frequency with which these countries cite each other in their respective publications

CONCLUSION

To conclude, the expanding literature on digital storytelling indicates its increasing recognition as an effective teaching instrument in language education. This rise in academic papers indicates a broader adoption of the method in educational contexts. Contributions from a diverse array of experts across multiple countries and institutions signify the emergence of a vibrant and collaborative research community.

To optimise its educational effectiveness, digital storytelling must be integrated into language curricula via well-constructed, incremental assignments that correspond with linguistic goals and multimodal learning outcomes. This necessitates institutional support through professional development and readily available digital tools. Educators are advised to start with manageable, scaffolded projects before progressing to more complex productions.

Additional empirical investigation is required to evaluate the enduring educational advantages and examine its applicability across diverse linguistic and cultural settings. As numerous institutions establish themselves as frontrunners in this domain, the global momentum highlights digital storytelling's capacity to transform language instruction and enhance educational experiences globally.

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