Research Article

A systematic literature review on significant and sustainable impact on teaching and learning in the 21st Century classroom

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Abstract

This study presents a comprehensive examination of the teaching and learning benefits of digital storytelling in the 21st-century classroom, as well as the prevailing theoretical and methodological trends in digital storytelling research in school education. A systematic literature review encompassed 59 articles published between 2000 and 2021, sourced from databases such as Google Scholar, ERIC, EBSCO, Web of Science, and Social Science Index. Digital storytelling has a significant positive impact on the 21st-century classroom. The literature highlights that digital storytelling is an invaluable instructional tool for teachers to develop the essential 21st-century skills and competencies required to meet the demands of the global economy. The active involvement of learners in the creation and presentation of their own digital stories has been found to foster the development of these skills. The review also identifies the prevailing theoretical and methodological perspectives observed in digital storytelling research over the past two decades, which predominantly revolve around the theoretical framework of social constructivism and the use of interviews as a data collection method. Furthermore, more than 50 per cent of the studies focused on the second-grade level, indicating a concentration of research in this educational context. The findings of the literature review highlight essential areas for future research in digital storytelling. This study contributes to the existing literature by providing a comprehensive overview of the teaching and learning benefits of digital storytelling in the 21st-century classroom. It also identifies research gaps and areas for further exploration, facilitating the advancement of knowledge in this field and informing future research endeavors.

Keywords: digital storytelling, teaching-learning benefits, benefit to disabled children, 21st Century classroom

Introduction

In the 21st century, with the rapid advancements in technology and the changing landscape of education, there is a growing need to explore innovative approaches that can significantly impact teaching and learning in classrooms. One such approach that has gained considerable attention is digital storytelling. Digital storytelling in education harnesses the power of technology to engage learners in a creative and collaborative process, enabling them to construct meaningful narratives using various media elements. This approach has been widely recognized for its potential to enhance students' cognitive and literacy skills, promote critical thinking, and foster effective communication and collaboration. While digital storytelling holds promise as a valuable educational tool, there is a need for a comprehensive and systematic review of the literature to understand better its significant and sustainable impact on teaching and learning in the 21st-

century classroom. Existing studies have provided insights into the positive effects of digital storytelling on various educational outcomes, such as language competence, identity exploration, and presentation skills. However, there is a lack of meta-synthesis literature reviews that synthesize and analyze the existing research in this field.

Therefore, this systematic literature review aims to bridge this gap in the research by conducting a comprehensive analysis of the available evidence on the significant and sustainable impact of digital storytelling on teaching and learning in the 21st-century classroom. By employing a rigorous meta-synthesis approach, this study will synthesize the findings from multiple studies, providing an overall picture of the effectiveness of digital storytelling as an educational tool. This systematic literature review will draw upon the citations and findings discussed in the previous sections to advance our understanding of educational digital storytelling and its impact on teaching and learning. By synthesizing and analyzing the existing research, this study aims to provide valuable insights into the potential of digital storytelling as an effective educational tool in the 21st-century classroom, thereby informing educators, researchers, and policymakers about its significance and sustainable impact.

Theoretical Background

Educational digital storytelling is grounded in the theoretical framework of constructionism, developed by Seymour Papert of the MIT Media Lab, building upon Jean Piaget's constructivism theory of learning. Constructionism emphasizes the active creation of tangible outcomes in the real world as a means of meaningful learning. According to Papert, successful learning occurs when learners engage in the process of constructing physical or meaningful objects within educational activities. However, constructionism extends beyond mere construction and highlights the importance of the creative process and the sharing of the final product with others to harness the learning experience fully. Papert's focus was on how learners interact with their own creations or artifacts, as these interactions promote self-directed learning and the construction of new knowledge. He emphasized the role of technologies, media, and context in human development. Constructionism theory posits that learning is most effective when learners create a product to share with others. This theory aligns with constructivism in promoting individualized, child-centered, and discovery learning, where children actively explore new knowledge and construct meaning by connecting it to their prior knowledge and experiences.

While constructivism centers on mental constructions, constructionism emphasizes materializing learners' ideas in tangible objects in the real world, referred to by Papert as "public entities". Constructionism sheds light on how ideas are developed and transformed through diverse media, shaped by learners' minds, and actualized within specific contexts. In other words, the focus shifts from universal learners to individual learners' interactions with their own artifacts, representations, and objects to think. Educational digital storytelling embodies Papert's philosophical approach and learning theory of constructionism by emphasizing collaboration, the creation of meaningful artifacts, sharing those artifacts, and utilizing tools, media, and context. A crucial element of educational digital storytelling is the expression of ideas, thoughts, and emotions by learners to their peer groups through communication and collaboration. Drawing upon the theoretical framework of constructionism, educational

digital storytelling underscores the importance of learners actively creating tangible outcomes and sharing them, facilitating meaningful learning experiences. Through its incorporation of collaboration, diverse media, and artifact development, educational digital storytelling aligns with the principles of constructionism and offers a powerful approach to learning in the 21st-century classroom.

Digital story

Digital storytelling is a multimedia form of presentation that combines photos, animations, music, and narration within a narrative structure. It emerged from artistic experimentation in the 1970s and 1980s, allowing for the sharing of personal narratives with a broader audience. The Center for Digital Storytelling defines it as using computer-based storytelling tools, incorporating various multimedia elements like graphics, audio, video, and web publishing. Digital storytelling provides a creative platform for individuals to express their experiences and perspectives using technology, engaging audiences through visual and interactive elements. It transcends traditional limitations, allowing stories to be shared globally through digital platforms, fostering connectivity, and amplifying diverse voices. In summary, digital storytelling combines technology and artistry to create impactful narratives that connect with audiences worldwide.

Digital Storytelling in Classroom

Storytelling, as a pedagogical approach, has been recognized for its effectiveness in enhancing learning outcomes across various domains of education (Sharda, 2007; Smeda, Dakich, & Sharda, 2014). With the rapid advancements in technology, storytelling has taken on a digital form, utilizing various hardware and software systems (Van Gils, 2005; Smeda, Dakich, & Sharda, 2014). This digital transformation has given rise to the concept of digital storytelling, which has emerged as a powerful tool in educational settings for enhancing teaching and learning (Xu, Park, & Baek, 2011). Digital storytelling offers unique opportunities for children to nurture their creativity and problem-solving skills in innovative ways (Ohler, 2008). In the twenty-first century, the evolution of technology and global competition has significantly influenced the conceptualization of literacy practices. Educators are now challenged to incorporate effective teaching strategies that blend traditional and innovative forms of literacy (Kress, 2003; Lankshear & Knobel, 2003; Mills, 2010). Digital storytelling is a technological application that harnesses learner-contributed content, empowering instructors to overcome the challenges associated with productive technology integration in classrooms.

By leveraging digital storytelling, educators can tap into the potential of student-generated content, enabling learners to participate in the creation and sharing of their narratives actively. This approach fosters engagement, creativity, critical thinking, and digital literacy skills among students. Furthermore, digital storytelling provides a platform for students to communicate their ideas, knowledge, and perspectives effectively, fostering a collaborative and interactive learning environment. Digital storytelling offers a promising avenue for educators to incorporate technology in meaningful ways that enhance teaching and learning. By embracing this pedagogical approach, educators can harness the power of technology to engage students, foster creativity, and develop essential literacy skills for the twenty-first century.

21st Century Classroom Skills

21st-century learners need to develop various skills to succeed in today's society. Communication, collaboration, creativity, critical thinking, and problem-solving are essential skills that enable students to thrive in the 21st century. These skills, often referred to as 21st-century skills, are vital for both everyday life and the workplace. Therefore, it is crucial to incorporate these skills into the education of students alongside subject-specific content. Digital storytelling plays a significant role in fostering 21st-century skills among students. When students create their own digital stories, they acquire key skills and literacies identified by the Consortium for 21st Century Skills (Robin, 2008). These literacies, often called "Twentieth-Century Literacy," have evolved with technological advancements (Robin, 2006; Brown, Bryan, & Brown, 2005). These 21st-century literacies encompass digital literacy, which involves effective communication, social issue discussions, information gathering, and seeking support. Global literacy focuses on reading, analyzing, interpreting, and responding to messages from a global perspective. Technology literacy uses devices and technological advancements to enhance learning, performance, and productivity. Visual literacy involves the ability to communicate, understand, and produce visual images. Information literacy encompasses finding, analyzing, evaluating, and synthesizing information (Robin, 2006).

In addition to the aforementioned literacies, developing digital stories also cultivates a broader set of skills. These include research skills, writing skills, organization skills, technology skills, presentation skills, interview skills, interpersonal skills, problem-solving skills, and assessment skills (Robin, 2006). Garcia and Rossiter (2010) propose adding three additional skills to these literacies: empathy and perspectives, self-understanding, and community-building. These skills involve sharing experiences, expanding perspectives, self-reflection, and fostering communication and collaboration with others. Digital storytelling not only enhances students' technological proficiency but also nurtures a wide range of 21st-century skills and literacies. By engaging in the process of creating digital stories, students develop valuable abilities such as communication, critical thinking, problem-solving, and collaboration, preparing them to be active and informed citizens in an ever-evolving digital world.

Research Questions

This study aims to address the existing gap in comprehensive and reliable research on digital storytelling in the 21st-century classroom. The research questions aim to address the existing gap in comprehensive and reliable studies on digital storytelling in the 21st-century classroom environment. By conducting a systematic review, this study aims to analyze the results of previous research holistically, examine the theoretical and methodological trends in digital storytelling in K-12 classrooms, and identify the areas that require further investigation and research in the field. The research questions are as follows

RQ1: Why is digital storytelling considered to have a significant and sustainable impact on teaching and learning in the 21st-century classroom?

RQ2: What are the prevailing theoretical and methodological trends observed in using digital storytelling in K-12 classrooms?

RQ3: What are the future research needs and areas of exploration in the field of digital storytelling in school settings?

Methodology

Systematic literature review

In this research, the researcher followed the PRISMA 2021 guidelines for data collection. A systematic literature review was conducted to identify, select, and critically evaluate published research works to address a specific research question. The review followed a well-defined protocol, with clearly determined inclusion criteria, and encompassed a systematic, comprehensive, and transparent search of published literature across multiple databases. This approach allows for the replication and innovative reproduction of the study by new researchers.

Literature Search and Author's Contribution

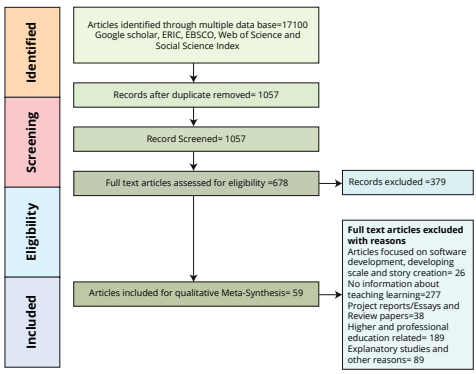
During the literature collection process, relevant search keywords such as "benefits of digital storytelling in teaching and learning," "educational implications of digital storytelling," and "digital storytelling and 21st-century competencies and skills" were used to obtain educational digital storytelling studies. Multiple databases, including Google Scholar, ERIC, EBSCO, Web of Science, and Social Science Index, were searched to gather the articles. The inclusion criteria for the meta-synthesis of research studies were as follows:

- Studies conducted between the years 2000 and 2021
- Studies available as open-access or publicly accessible
- Studies published in peer-reviewed journals and written in English
- Studies conducted with school children from pre-kindergarten to higher secondary level (K-12 grade)
- Studies addressing the teaching and learning benefits of using educational digital storytelling
- Studies addressing 21st-century competencies and skills

The first author systematically searched articles based on predetermined research questions, and the second author identified, selected, systematically analyzed, and critically examined 59 included articles. Both authors then classified the research work in a structured manner to answer the formulated questions, replicating and reproducing the findings. A comprehensive and systematic approach was taken to collect, analyze, and synthesize the literature, ensuring the inclusion of relevant studies that meet the predetermined criteria.

PRISMA chart

Figure-1: Search flow chart



Systematic Analysis of Selected Studies

The systematic analysis of selected literature focused on the three main research questions. The analysis involved examining the purpose of each study, understanding the theoretical foundations guiding the research, evaluating the rigor of the research methods, considering the grade level of participants, reviewing data analysis and interpretation techniques, assessing the validity of data collection strategies, exploring future research needs and methodological improvements, and analyzing the positive impacts and advantages of digital storytelling for various student populations. This systematic analysis provided a comprehensive understanding of the research landscape, encompassing objectives, theoretical foundations, methodologies, participant characteristics, data analysis approaches, data collection strategies, future research needs, and the benefits of digital storytelling in education.

Objectives of Digital storytelling research Studies

The objective of the systematic analysis was to examine and code the objectives of the research articles systematically to provide a comprehensive understanding of the objectives of digital storytelling in the 21st century. This analysis also aimed to provide literature references that can serve as a valuable resource for further research and understanding of the topic. By systematically examining and coding the objectives of the research articles, this analysis contributes to a deeper understanding of the purpose and focus of digital storytelling in the context of the 21st century.

Table-1: Objectives of Digital storytelling research studies

Theme	Reference
Academic and social skills	[4][7][8][14][19][22][23][24][30][31][37][40][41] [44][47][51][57]
Integration of technology	[3][12 [15][18][22]][27][35][37][46][47][49] [51][53]
Personality factors	[19][23][28][30][31][34][44] [47][52][54][57]
Academic achievement	[15][21][26][32][34][38][45][46][52][54]
21st Century competencies	[1][4][8][12][17][20][35] [56]
Learning	[9][12][27][35][47][49][56]
Classroom management	[2][4][15][23][27][35]
Perception and opinion	[23][32][38][42][59]
Knowledge construction	[40][49][53]

Theoretical and conceptual framework

The theoretical and conceptual frameworks employed in digital storytelling studies were systematically analyzed and synthesized. Using theories aims to contribute to developing research problems, designing appropriate research questions, guiding the selection of relevant information, interpreting the data, and providing explanations for observed phenomena. Most of the studies reviewed in this analysis adopted a social constructivist theoretical framework. Theoretical and conceptual frameworks used in the studies are presented in the table below. This analysis provides a comprehensive overview of the theoretical foundations of digital storytelling research, offering insights into the frameworks guiding the investigations.

Table-2: Theoretical and conceptual framework

Theme	References
Social Constructivism	[4][5][20][23][44][49][50][58]
Multiliteracies Pedagogy	[4][6][7][15]
New Literacy Theory	[49][55]
Child-centered learning	[28][53]
Situation learning and cognition learning	[32][47]
Dialogical approach	[49][55]
Critical literacy theory	[4][51]
Critical engaged pedagogy and global sharing pedagogy	[3][35]
Cognitive apprenticeship	[29]
Community learning and practice	[16]
Constructionism	[41]
Inquiry based learning	[30]
Active learning	[44]
Reflective learning	[51]
Cognitive developmental theory	[23]
Symbolic interactionism	[33]
critical race theory	[43]
Ecological system theory	[20]
Double diamond theory	[3]

Methodology

Research methodologies are essential in addressing specific issues and provide scholars with the necessary knowledge to apply them to real-world problems. By examining the research methods employed in digital storytelling studies, this synthesis aimed to understand which methods are most suitable and effective for investigating digital storytelling-related issues in school education. The detailed examination revealed that most researchers opted for quasi-experimental research methods as their approach to conducting research in digital storytelling.

Table-3: Methodology

Theme	Reference
Quasi-Experimental	[7][19][23][27][28][38][47][51][52][53][54][57]
Case study	[3][15][18][25][40][41][48][49][50][59]
Action research	[17][22][55][58][50]
Mixed method	[9][16][44][46]
Experimental	[1][35][42]
Participatory research	[11][33]
Ethnography	[4]
Narrative study	[51]

Grade of participants

In the selected digital storytelling articles, the participants were primary school students ranging from grades K-12. The systematic analysis revealed that researchers predominantly focused on secondary-level students (grades 6-8) in their studies. However, there was a limited amount of research conducted on digital storytelling in pre-primary level students. This finding highlights the need for further exploration and understanding of the application of digital storytelling in early childhood education.

Table-4: Grade of participants

Theme	Reference
Grades 6-8	[2][3][4][6][7][9][10][11][4][15][16][18[]21][22][23][33][41] [43][45][51][53][[55]
Pre-school to 5	[1][5][12][13][17][20][27][32][35][40][42][47][54][56][59]
Grades 9- 12	[8][11][18][19][28][34][45][47][49][51[[57][58]

Data collection

The data collection strategies employed in digital storytelling studies played a crucial role in determining the quality and reliability of the data analysis and interpretation. The systematic analysis revealed various data collection techniques, including surveys, interviews, observations, and document analysis. These strategies allowed researchers to gather diverse perspectives and rich insights on the benefits and impacts of digital storytelling in education. The careful selection and application of data collection methods ensured the validity and comprehensiveness of the findings.

Table-5: Data collection

Theme	Reference
Interview and focus group discussion	[1] [3][4][9][11][16][17][22][25][28][31][33][35][40][41] [42][44][45][46] [48][49][50][52][55][58] [59]
Questionnaire and survey	[7][9][16][19][23][27][28][38][44][46][47] [51][52][53] [54][57]
Artifacts	[3][15][18][25][40][41] [11][33][35][42] [9][44][46] [17] [22][55][58][50]
Field notes	[1][3][9][11][16][22][25][33][35][45][48][50][52][55][58] [59]
Observations	[1][3][4][9][22][25][28][33][35][42][44][48][52][55][58]
Video and audio records	[1][3][4][9][16][17][22][25][28][31][33][40][44][48][55] [58][59]
Achievement test	[4][9][16][19][20][24][27][29][34][37][44][46][47]
Scales	[6][10][13][15][9][21][23][28][33][37][44][51][55][58]
Reflective journals	[8][15][16][19][20][49]
Documentary and blogs	[9][13][48][53]

Data analysis and interpretation

The data analysis and interpretation in the digital storytelling studies encompassed a range of approaches and techniques. Thematic coding/analysis was commonly employed, allowing researchers to identify and categorize recurring themes and patterns within the data. The descriptive analysis provided a comprehensive overview and summary of the collected data, while artifacts and content analysis examined the digital stories themselves for deeper insights. Ethnography and protocol analysis delved into the social and cultural contexts of digital storytelling practices, while interaction and dialogical discourse analysis focused on communication and dialogue within the storytelling process. Textual narrative and analytic memo techniques were used to explore the narrative elements and reflective insights present in the data. These diverse approaches enabled researchers to analyze and interpret the data from multiple perspectives, enriching the understanding of the impact and benefits of digital storytelling in education.

Table-6: Data Analysis and Interpretation

Theme	Reference
Inferential analysis	[1][7][16][19][23][27][28][35][38][44][46] [47][50][52][53][54][57]
Thematic coding/ analysis	[4][5][9][11][13][17][21][24][43][45][51]
Descriptive analysis	9][16][23][27][44][46][50][52][54][59]
Artifacts and content analysis	[3][11][15][18][25][40][41] [42][55][58][50]
Ethnography and protocol analysis	[4][51]
Interaction and dialogical discourse analysis	[11][33]
Textual narrative and analytic memo	[51]

Future research needs, methodological changes, and context

The literature examination revealed several areas of future research needs and scope in educational digital storytelling. These can be classified into three main themes: the problems that need to be investigated, the methodological changes that are required, and the priority contexts for digital storytelling research in school education. Identifying and addressing these research needs will contribute to the advancement and understanding of digital storytelling as an effective educational tool.

Table-7: Future research needs, methodological changes, and context

Themes	Sub-themes
Problem to be investigated in educational digital storytelling	Integration of digital storytelling and augmented reality
	The social context of digital storytelling
	Gifted education curriculum and digital storytelling
	Individual education plan and personalized education
	Digital Storytelling in early childhood education
	Story writing in a digital context
	Efficiency and effectiveness of digital storytelling in STEM Subjects.
	Digital storytelling for remedial students learning
	Cooperative and collaborative learning
	Art of digital storytelling
	Curriculum design and digital storytelling
	Culture of thinking and digital storytelling

Themes	Sub-themes
Research methodology to be changed	Phenomenological studies
	Comparative studies (subject, grade, and country)
	Experimental studies
	Follow-up studies
Context need to be conducted	Inter-culture
	Multilingual and multicultural context
	Slumps, migrants and wide digital gap

Benefits of digital storytelling in the teaching-learning process

Numerous research studies have demonstrated the various benefits of educational digital storytelling in the teaching and learning process. Personalized education and instruction are among the attractive advantages observed in digital storytelling. Van Gil (2005) highlights that students can actively participate by presenting their understanding, reflections, and experiences while creating their own digital stories. This active engagement transforms them from passive information consumers to active knowledge constructors (Ohler, 2008). The UNESCO program for the United Nations Decade of Education for Sustainable Development acknowledges the significance of digital storytelling as a critical teaching strategy for achieving the objectives of education for a sustainable future (UNESCO, 2010). Teachers also recognize digital storytelling as a valuable tool for enhancing students' research skills and promoting other essential competencies. For instance, Smeda, & et.al. (2014) note that digital storytelling can improve spelling, writing, communication, and collaboration skills. Furthermore, it facilitates the learning of cross-curricular competencies such as teamwork, independent learning, and project work, empowering students to choose the competencies they want to develop (Smeda, Dakich, & Sharda, 2014). In addition to these pedagogical benefits, digital storytelling simplifies the comprehension of complex ideas through the use of multimedia (Oppermann, 2008). It provides an effective medium for learners to express their voices with creativity and intellectual depth. This fosters a sense of agency and empowerment among students. Moreover, educational digital storytelling is considered an asset-based pedagogy, as it incorporates multiple aspects of the core curriculum, allowing for the integration of various content areas (Benmayor, 2008). Educational digital storytelling offers personalized education, encourages active participation, enhances research and other key skills, facilitates the learning of cross-curricular competencies, promotes the comprehension of complex ideas, and empowers students to express their voices. It is recognized as a valuable pedagogical approach that aligns with the objectives of education for a sustainable future.

Table-8: Benefits of using digital storytelling in the 21st Century classroom

Characteristics of learners	Suggested instructional strategies	How to use digital storytelling	Benefits/outcome
Tech intelligence and creativity	Meaning full integration of technology into instructional methods, classroom activities and assignment.	Learners' creation of digital stories as classroom activities/ assignment and as group work	Deeper understanding
Multimedia lovers	Gives an active activity/ task/ assignment to complete	Synthesis content from a range of resources and create an entirely new story based on the content.	Higher order thinking
Interest in internet content creation	Encourage students to contribute helpful content blogs, and websites and create YouTube videos	Created stories upload to the blog, youtube, and other mediums.	World exploration Vast variety of resources, information and content Communication and collaboration Shared reflections Global pedagogical sharing Social interaction (William &et. al.,2018)
Inductive discovery	Just-in-time teaching, inquiry-based instruction and hypothetical case studies.	Organize their own ideas-ask questions-express opinions-construct narratives.	Motivation Experimental data interpretation
Hit or miss/ trial and error	Allow learners to use their techniques and strategies to solve problems and allow them to analyze their own failure and take complete control of their learning	to create their own stories through the learning of what worked and why? Or what didn't work and why?	Complex real-world problem-solving Critical thinking ability Research and experiment Alternative learning

Visual communication	Support endless possibilities for designing assignment innovative and creatively with the use of images, videos and augmented realities	Creative and innovative story making	Creativity and interest Inquiry based learning Research aptitude Long lasting memory Engagement and concentration Technology literacy (Robin, 2008)
Short attention span	Encourage digital multitasking	Making narrations their own pace	Improved attention Multiple intelligence Continuous engagement Concentration
Pressure to succeed	Activation and utilization of learners multiple intelligence	Narration from deep understanding and critical reflection	Critical thinking Deep learning Innovation Independent thinking
Self learners	Allow students to learn their own way	Making own content for learning	Interest and self motivation Research aptitude Content writer and creator
Gifted	More challenging and complicated problems	Freedom of expression and creation	Problem solving Critical thinking Discovery learning
Influencers	Allow learners take content from real life experiences or socially relevant content for assignment, classroom activities.	Own voice, sound modulation and emotions	Leadership Engagement Evoke emotions
feedback/ suggestion seeker	At the End of each storytelling section provide positive and critical feedback	Include peer feedback section in the digital storytelling process	Better planning Accepting positive and negative criticism

Benefits to gifted and learning disabled students

Digital storytelling in the classroom offers specific benefits to both gifted and disabled students. Gifted students can benefit from personalized education and instruction through digital storytelling, allowing them to explore their understanding, reflect on their experiences, and evaluate their potential (Van Gil, 2005). This active participation helps gifted students utilize their intellectual abilities to create meaningful digital stories, fostering their creativity and intellectual depth. Additionally, digital storytelling is a powerful tool for inclusive education, benefiting students with disabilities. Ohler (2008) emphasizes that digital storytelling transforms students from passive consumers to active knowledge constructors, enabling disabled students to engage actively with the learning process. It allows them to express their understanding and experiences in a multimodal format, accommodating diverse learning styles and abilities.

In addition, digital storytelling can support the development of various skills and competencies for both gifted and disabled students. Teachers have reported improvements in research skills, spelling, writing, communication, collaboration, and other essential skills through the use of digital storytelling (Smeda, Dakich, & Sharda, 2014). This inclusive approach allows gifted and disabled students to enhance their academic abilities while fostering a sense of belonging and empowerment in the classroom. Digital storytelling in the classroom offers personalized education, active participation, and skill development for both gifted and disabled students. It provides a platform for inclusive learning, allowing students to express their understanding and experiences in a multimodal format. By leveraging the benefits of digital storytelling, educators can create an inclusive and engaging learning environment that supports the unique needs and abilities of gifted and disabled students.

Discussions

The literature provides evidence supporting the significant and sustainable impact of digital storytelling on teaching and learning in the 21st-century classroom. Numerous studies have highlighted the positive effects of digital storytelling in enhancing various skills and competencies demanded by the modern global economy. Researchers have found that digital storytelling promotes personalized education and instruction, enabling students to participate actively in their learning process rather than being passive consumers of information. By creating their own digital stories, students can express their understanding, reflections, and experiences, while also evaluating their own potential. This active engagement fosters critical thinking, problem-solving, communication, and collaboration skills, among others. UNESCO recognizes digital storytelling as a key teaching strategy for achieving education objectives for a sustainable future. Furthermore, teachers have reported that digital storytelling is a valuable tool for improving students' research skills and facilitating cross-curricular competencies such as teamwork, independent learning, and project work. In addition, digital storytelling allows for the compression and communication of complex ideas through the use of multimedia, enabling learners to express their creativity and intellectual depth. Digital storytelling is considered an asset-based pedagogy that incorporates multiple aspects of the core curriculum.

Digital storytelling is considered to have a significant and sustainable

impact on teaching and learning in the 21st-century classroom. It promotes personalized education and active student participation, fostering critical thinking, problem-solving, communication, and collaboration skills (Van Gil, 2005; Ohler, 2008). UNESCO recognizes digital storytelling as a key strategy for achieving education objectives (UNESCO, 2010). Additionally, it enhances research skills and facilitates cross-curricular competencies (Smeda, Dakich & Sharda, 2014). Digital storytelling allows for compressing complex ideas through multimedia, fostering creativity and intellectual depth (Oppermann, 2008; Benmayor, 2008). The prevailing theoretical framework in digital storytelling research is social constructivism, emphasizing the active construction of knowledge through social interactions (Van Gil, 2005). In terms of methodology, in-depth interviews have been commonly used to gain insights into students' experiences and learning outcomes (Ohler, 2008). Qualitative approaches such as thematic and narrative analyses have been employed to interpret and analyze the data (Van Gil, 2005). Future research in digital storytelling should focus on developing 21st-century skills, integrating digital storytelling into STEM education, exploring outcome-based and self-directed learning, and investigating augmented reality applications (UNESCO, 2010; Oppermann, 2008). Additionally, there is a need to explore digital storytelling in early childhood education, gifted education programs, and as an instructional aid for differently abled students (Smeda, Dakich & Sharda, 2014). Conducting in-depth qualitative studies is recommended to gain a comprehensive understanding of digital storytelling's educational benefits (Van Gil, 2005).

Findings and Conclusion

The research findings on digital storytelling in the 21st-century classroom reveal compelling evidence of its profound impact on teaching and learning. Numerous studies have consistently demonstrated the positive outcomes and benefits associated with this innovative pedagogical approach. Firstly, digital storytelling has been found to significantly enhance language skills, including writing and speaking abilities (Van Gil, 2005). By creating and sharing their own digital stories, students engage in active expression and reflection, which fosters language development and communication proficiency. Furthermore, digital storytelling cultivates critical thinking and problem-solving skills (Ohler, 2008). Through the process of crafting narratives and incorporating multimedia elements, students are challenged to analyze, synthesize, and present information coherently and engagingly. Collaboration and teamwork are also nurtured through digital storytelling (Smeda, Dakich & Sharda, 2014). Students work together, sharing ideas, perspectives, and creative inputs, thus fostering a sense of community and enhancing their ability to collaborate effectively.

Digital storytelling stimulates creativity and innovation (Oppermann, 2008). By blending textual, visual, and auditory elements, students are encouraged to think outside the box, experiment with various media tools, and express their ideas in unique and imaginative ways. Moreover, digital storytelling aligns with the development of 21st-century skills, which are essential for success in the modern global economy. These skills include critical thinking, problem-solving, communication, collaboration, creativity, and digital literacy (UNESCO,

2010). The literature also suggests potential applications of digital storytelling in specific educational contexts. For instance, it can be used to support early childhood education by fostering imagination, language development, and social-emotional skills (Benmayor, 2008). Additionally, digital storytelling shows promise in gifted education programs, catering to the unique needs and abilities of gifted students (Smeda, Dakich & Sharda, 2014). The findings underscore the immense potential of digital storytelling as a powerful teaching and learning tool. Its ability to enhance language skills, critical thinking, collaboration, creativity, and 21st-century competencies positions it as a valuable approach to preparing students for success in the rapidly evolving digital age.

Limitations and suggestions

While this study provides valuable insights into the teaching and learning benefits of digital storytelling in the 21st-century classroom and the prevailing theoretical and methodological trends in educational digital storytelling, it is important to acknowledge certain limitations. The inclusion criteria for the literature review may have inadvertently excluded relevant studies that were not captured by the selected databases. This could introduce a potential bias in the findings. To mitigate this limitation, future research could expand the search strategy to include additional databases or sources to ensure a more comprehensive coverage of the literature. Most of the included studies focused on secondary grade levels, which may limit the generalizability of the findings to other educational settings. While the identified theoretical and methodological trends are based on the selected studies, there may be emerging theoretical frameworks and research methods in educational digital storytelling that have not yet been widely explored. Future research could investigate alternative theoretical perspectives and innovative methodologies further to enrich the theoretical and methodological landscape in this field.

Researchers could delve deeper into the cognitive, affective, and social processes involved in digital storytelling to identify the key factors contributing to its positive impact on student learning outcomes. There is a need to explore the integration of digital storytelling in STEM education. Future research could examine how digital storytelling can be effectively incorporated into STEM curricula to foster engagement, critical thinking, problem-solving, and creativity among students in these fields. This would provide valuable insights into the potential of digital storytelling as a tool for interdisciplinary learning. Additionally, future studies could focus on outcome-based learning and self-directed learning in the context of digital storytelling. Researchers can investigate how digital storytelling aligns with outcome-based approaches and supports students' ability to take ownership of their learning process, set goals, and reflect on their progress. This would contribute to a deeper understanding of the role of digital storytelling in promoting student agency and meta-cognitive skills.

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