

Digital Narrative and Its Application in Library and Information Science

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Abstract

Purpose/Significance This paper aims to investigate the theoretical overview of digital storytelling and its application as a tool or method in academic research and practice within library and information science. **Methods/Process** This study examines the developmental history of narrative and digital storytelling, synthesizes relevant academic research findings to summarize the theoretical overview of digital storytelling—including its connotation, characteristics, elements, and types—and simultaneously applies bibliometric and thematic analysis methods, utilizing ITGinsight software to conduct disciplinary domain and research theme analysis on published literature and abstracts concerning digital storytelling. Concurrently, it identifies theoretical research and cases related to library and information science, and accordingly summarizes the application status of digital storytelling within the field. **Results/Conclusion** The findings indicate that digital storytelling represents a new manifestation of the ancient narrative tool in the digital and information age, characterized by flexibility, universality, dynamism, and interactivity, along with diverse types and forms of creation and expression, making it fully applicable to research and practice across multiple domains. Through bibliometric and thematic analysis, it is revealed that digital storytelling has been employed in numerous fields including education, computer science, communication, literature, library and information science, and even the humanities and social sciences, while simultaneously expanding toward natural sciences such as medicine and engineering; research on digital storytelling concentrates on over 20 themes including education, social public services, physical health, medicine, and entertainment. In library and information science research, digital storytelling provides effective and direct support for academic research, information and knowledge resource management, cultural heritage preservation, library public education, reading promotion, and digital library construction, enabling libraries to better fulfill their functions. In summary, digital storytelling can be fully integrated into library and information science research, and the fusion of the two will serve as

an excellent opportunity to promote mutual development.

Full Text

Digital Storytelling and Its Application in Library and Information Science

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Abstract:

[Purpose/Significance] This paper aims to investigate the theoretical overview of digital storytelling and its application as a tool or method in the academic research and practice of library and information science. [Method/Process] By examining the developmental trajectories of narrative and digital storytelling and synthesizing relevant academic research findings, this study summarizes the theoretical framework of digital storytelling, including its connotation, characteristics, elements, and types. Simultaneously, employing bibliometric and thematic analysis methods and utilizing ITGinsight software, we analyze the disciplinary domains and research themes of published literature on digital storytelling. We also identify theoretical studies and cases related to library and information science, thereby summarizing the current state of digital storytelling applications in these fields. [Results/Conclusion] The findings indicate that digital storytelling represents a new manifestation of the ancient narrative tool in the digital and information age, characterized by flexibility, universality, dynamism, and interactivity, along with diverse types and creative forms. It can be applied across multiple domains of research and practice. Bibliometric and thematic analysis reveals that digital storytelling has been employed in education, computer science, communication, literature, library and information science, and numerous other humanities and social science disciplines, while also expanding into natural sciences such as medicine and engineering. Research on digital storytelling concentrates on over 20 themes, including education, social public services, physical health, medicine, and entertainment. In library and information science research, digital storytelling provides effective and direct support for academic research, information and knowledge resource management, cultural heritage preservation, library public education, reading promotion, and digital library construction, enabling libraries to better fulfill their functions. In summary, digital storytelling can be fully integrated into library and information science research, and the convergence of the two fields will serve as an excellent opportunity for mutual development.

Keywords: Narrative; Digital Storytelling; Library Science; Information Science; Application

Classification Number: G250.7

In recent years, narrative analysis has gained attention and adoption as a research method or tool across humanities and social sciences, undergoing a significant shift from text-oriented to practice-oriented approaches. The essence

of this transformation lies not in formal changes to stories themselves, but in the awakening realization that stories can serve as symbolic expressions conveying deeper meanings in academic research and practice [1]. In traditional perceptions, narrative is often considered a literary genre or research direction exclusive to literature, with narrative analysis merely extracting or reconstructing content from textual records. However, this is not the case. As an ancient and distinctive human quality, narrative has been widely employed since before the invention of writing, with a history as long as human civilization itself. In pre-literate eras, our ancestors used narrative to disseminate knowledge, wisdom, experiences, and ideas—practices that facilitated human continuity and accelerated civilization’s formation. Having served humanity for millennia, narrative remains an essential tool in both academic research and daily life.

Narrative encompasses both narration and story, where story constitutes the content and object of narrative, while narration represents the means and method of expressing the story and its implicit information and knowledge. Regarding knowledge, some scholars recognize that “narration is a fundamental pathway for humans to understand the world.” The renowned French philosopher Jean-François Lyotard proposed in *The Postmodern Condition* a “universal narratology,” suggesting that human knowledge consists of “scientific knowledge” and “narrative knowledge”—meaning that all theories and knowledge in humanities and social sciences are essentially narrative in nature, except for natural sciences. While this statement may be somewhat exaggerated, as social science research also employs “scientific” methods (such as statistical methods and fieldwork) [2], it contains certain merits from specific perspectives. This awareness of narrative’s significance in humanities and social sciences resembles an awakening, given narrative’s ancient history.

Since its inception, narrative has been intimately connected with information and knowledge. As library and information science primarily focuses on information and knowledge as research objects, it should naturally maintain a close relationship with narrative. Theoretically, narrative can serve as a crucial means of knowledge dissemination and management, widely applicable in academic research and practice.

In the 1960s and 1970s, humanity entered the “information age,” and digital technology gradually integrated into all aspects of social life with its unique charm, injecting new vitality into the ancient practice of narrative. This enabled narrative to participate in academic research and social practice in a more practical and sophisticated manner, giving rise to “digital storytelling.”

Digital storytelling represents the intersection of traditional narratology and digital technology—a method of telling stories and conveying knowledge and information using digital technologies such as audio, video, multimedia, and the Internet. Its emergence heralded new possibilities for knowledge dissemination and presentation, possibilities that can be applied across numerous humanities and social science fields to help scholars showcase research findings from different perspectives or popularize research results to the public in more accessible ways.

Library and information science is not only inseparable from narrative but also closely related to digital technology development. As a combination of digital technology and narrative, digital storytelling should be valued by library and information science and incorporated into relevant research and practice. Accordingly, this paper addresses the following questions: (1) What is digital storytelling? What is the research overview and current status? (2) What is the feasibility of incorporating digital storytelling into library and information science research? (3) What are the applications and practices of digital storytelling in library and information science?

1. From Narrative to Digital Storytelling

Narrative is a distinctive ancient human characteristic whose origins and evolution can be traced through human history [3]. The emergence and development of narrative benefited from human practices and activities. Stories originated from myths and distant legends—when our ancestors gathered around campfires after a day of hunting and farming, sharing daily experiences and mysterious fantasies, they engaged in the earliest narrative activities [4]. In these activities, people conveyed accumulated life experiences, acquired information, reverence for nature, and fantasies about deities through oral communication. During this process, they naturally adopted stories as containers for content, as this form facilitated emotional connection with audiences and made it easier for listeners to understand and accept the conveyed information.

Throughout human evolution, as environments and skills changed, narrative forms also transformed. Before writing emerged, people relied on oral narration, dance, songs, and pictures (such as murals) to record and recount events—including real-life experiences, incomprehensible natural phenomena, and speculations about mysteries. After writing and writing materials appeared, people inscribed or wrote down these contents, storing them in specific locations (precursors to libraries). Despite changes and expansions in narrative forms, narrative's function as a means of knowledge dissemination remained constant. Today, as society enters the information age and environments and skills change once again, narrative has expanded from traditional language and text media to new media supported by digital technology, acquiring a new manifestation—digital storytelling.

The Digital Storytelling Association (2002) defines digital storytelling as a modern form of traditional storytelling that uses digital media alongside images, music, voice, and narration to create content-rich stories that can be told, shared, and preserved. Digital storytelling practice began in North America in the 1990s, with pioneers including Dana Atchley, Joe Lambert, and Nina Mullen. In 1994, they jointly established the San Francisco Digital Media Center (later relocated to Berkeley and renamed the Center for Digital Storytelling), offering training courses and producing digital stories for local communities. As pioneers and leaders in digital storytelling, they proposed seven elements of digital storytelling, providing fundamental guidance for subsequent digital story creation.

Although digital storytelling originated in North America, its unique charm enabled rapid expansion worldwide. In 2001, British photographer Daniel Meadows collaborated with BBC to launch the BBC Capture Wales Digital Storytelling Project (<http://www.bbc.co.uk/capturewales>) in Wales, aiming to help community citizens build public and interpersonal relationships through sharing digital stories. In 2002, Joe Lambert visited Australia and assisted in establishing the Australian Center for the Moving Image, further promoting digital storytelling development in Australia. In 2003, the “Patient Voices” project was initiated, providing patients, families, and healthcare professionals with a means to tell their stories and 挖掘 compelling, effective experiences and insights from first-person perspectives to help healthcare workers improve treatment and care quality while motivating patients to actively participate in their treatment. Today, this project has been implemented in Canada, Australia, Norway, Hong Kong, Tanzania, and other countries/regions, and is widely applied in medical and nursing education [5].

2.1 The Seven Elements of Digital Storytelling

The Center for Digital Storytelling has proposed seven elements for digital storytelling creation to help creators produce interesting, creative, and effective digital stories. Properly employing these dynamic, interrelated elements helps enhance story meaning and persuasiveness [6]. (1) **Point of View:** Digital storytelling creation emphasizes the combination of story perspective and the author’s personal viewpoint. The author must convey personal opinions to the audience through story form—this is the fundamental reason for digital storytelling’s existence. Point of view is the most crucial element, determining what information the story aims to convey and defining the target audience. (2) **Dramatic Question:** Digital storytelling creation requires key questions that can capture audience attention, allowing audiences to find answers midway through or at the story’s conclusion. (3) **Emotional Content:** During creation, digital storytelling can employ images, music, lighting, color tones, and sound effects to maintain audience attention while “listening to the story” and connect audience emotions with the story itself. At this point, audiences experience sadness or joy according to plot changes, thereby accepting the information content hidden by the storyteller within the story. (4) **The Gift of Your Voice:** Creators can use the “authentic voice and tone” of the narrator or characters to interact with the audience, enhancing story authenticity and facilitating the conveyance of information and emotions within the story. (5) **The Power of the Soundtrack:** Creators can use soundtracks or other sound effects to enrich story content and enhance story power. (6) **Economy:** Digital storytelling works do not require excessive length or verbose content. The creation process should be audience-experience-oriented, controlling duration while arranging details appropriately. (7) **Pacing:** Story rhythm helps maintain audience emotion and interest; therefore, creators should plan where to be urgent and where to be slow during the creation process to enhance audience narrative experience.

2.2 Characteristics of Digital Storytelling

The primary characteristics of digital storytelling include flexibility, universality, interactivity [7], and dynamism [8]. Digital storytelling's flexibility manifests in its ability to incorporate information content into stories in relatively flexible ways during creation. Plotlines and narrative methods can be adjusted according to audience group changes without altering the information content. Simultaneously, digital technology and media can extend traditional linear (sequential) narration to non-linear formats, facilitating intuitive use of narrative techniques such as "flashback" and "intercalation" to enhance story completeness, interest, and value.

Digital storytelling's universality primarily provides ordinary people with the possibility to create and share stories with large audiences. In early narrative practices, novelists, film directors, and other professionals typically shared their created stories with the public. Today, as digital technologies and social platforms have become popularized, ordinary people also possess the capability to create digital stories and publish them on online platforms (such as TikTok short videos) without requiring advanced technical skills or substantial financial support. This story-sharing behavior promotes the formation of virtual communities with shared interests and values, helping many people find joy and friendship within them.

Dynamic change is another characteristic of digital storytelling works. The essence carried by stories is ultimately knowledge and information, and dynamism is one of information's characteristics. During digital storytelling creation, character settings, plot transitions, and other detail rendering all result from information fragment extraction. Due to limitations in expression techniques and technology, the narrative content presented in final works varies according to different conditions. Compared with traditional oral and written communication, multi-sensory digital storytelling works are more easily accepted by people. After stories are accepted, the desire to disseminate them is stronger than pure information, with more diverse dissemination methods. High-quality digital storytelling content spreads rapidly on digital platforms, exhibiting dynamic characteristics.

Interactivity represents another feature of digital storytelling, primarily manifested in the use of digital technology and media. Interactivity can be expressed as interaction between storytellers and audiences—for instance, connecting with audiences' multiple senses through music and images to enhance narrative experience. Alternatively, it can manifest as interaction between audiences and digital storytelling works themselves. Today, digital storytelling has evolved beyond being merely a technique and tool for conveying storytellers' information and knowledge to become a digital product. After acquiring digital storytelling products, audiences can interact with digital systems or other users through devices (such as monitors, mice, and game controllers) to obtain user experiences (in terms of product attributes, audiences become users).

2.3 Types of Digital Storytelling

Benefiting from rapid information technology development, digital storytelling has advanced swiftly in the few decades since its birth, with countless excellent works emerging to maximally satisfy people's spiritual, cultural, information, and knowledge needs. This paper explores existing digital storytelling types from different perspectives.

Two similar concepts have emerged in digital storytelling theory and practice—digital storytelling and Interactive Digital Narrative (IDN). Although the latter appears to be a subordinate concept of digital storytelling in name, the two differ in origin, development, focus, and research and practice content [9]. Like traditional narrative methods, some digital storytelling requires passive audience reception of story information, whereas interactive digital narrative emphasizes interactivity, providing audiences with space to actively participate in narrative activities. During narrative processes, creators (or storytellers) can communicate and interact with audiences, even setting options for audience selection to form different endings. Simply put, the direct method to distinguish the two is whether the digital storytelling work overly emphasizes audience interaction content. However, an increasing number of scholars are gradually ignoring the differences between the two, using digital storytelling as a general term.

From the perspective of story content, Western academia generally categorizes digital storytelling into three types: personal narrative, historical documentary (historical narrative), and stories providing information or instruction [10]. However, with practice development, digital storytelling has long transcended the categories of academic research, education, and public practice, even acquiring commercial and economic product attributes. Therefore, this paper argues that digital storytelling should have a fourth type: stories satisfying users' spiritual, cultural, and entertainment needs. Personal stories revolve around creators' or storytellers' life experiences, potentially including personal life experiences, anecdotes, ideas, and values. Personal narrative can help promote discussions on current issues such as learning and family education or serve as a positive method for addressing others' emotional problems. Historical narrative resembles an educational method that uses historical photographs, archives, classics, and other materials to reproduce historical or past events, helping audiences enhance understanding of historical memory. The third type is stories providing information or instruction, which, as the name suggests, contain certain information, knowledge, or experiences and are the most common type in education, journalism, and public practice. The fourth type involves works created using digital storytelling as a product development tool to satisfy users' spiritual, cultural, and entertainment needs, such as film and television works, electronic picture books, and narrative games.

The final perspective for classifying digital storytelling works is from the dimension of work extension or digital media, primarily including audio, video and performance, text, and game types. Audio digital storytelling uses audio tech-

nology and media for story narration, such as narrative music, songs, and audio files. Video and performance digital storytelling visually “presents” story content through live performance or animation creation, including film and television works, animation, documentaries, popular science videos, short videos, news, and digital forms of stage performances, dramas, and plays. Text-based digital storytelling uses text as the primary form in digital media, supplemented by pictures and images to present story content, such as hypertext fiction, interactive fiction games, and electronic picture books. Game digital storytelling refers to game works containing narrative content, mainly including profitable electronic narrative game products and public welfare/educational digital narrative games. Just as digital technology development has no upper limit, digital storytelling’s potential is equally infinite. Digital storytelling will undoubtedly give birth to various new types in the future, better satisfying societal and human needs.

3. Research Status of Digital Storytelling

To systematically review the research status of digital storytelling, this paper adopts bibliometric and text analysis methods to analyze digital storytelling-related papers and abstracts in the Web of Science (WOS) Core Collection. Using the search query “digital storytelling(topic)” or “digital narratologies(topic)” or “digital narrative(topic),” with a publication deadline of July 31, 2022, we retrieved 7,401 results spanning from 1990 to 2022.

3.1 Analysis of Annual Publication Volume

We statistically analyzed the 7,401 retrieved results by publication year to create an annual publication volume statistics table (Table 1) and trend chart (Figure 1 [Figure 1: see original paper]) for digital storytelling literature. The analysis shows that digital storytelling literature first appeared in 1990, coinciding with the birth of digital storytelling. Between 1990 and 2003, research enthusiasm for digital storytelling remained low, without forming a substantial body of work. Beginning in 2004 (30 papers), digital storytelling attracted increasing scholarly attention, with literature quantity showing a clear growth trend. From 2013 (248 papers) onward, digital storytelling research demonstrated rapid growth, reaching 1,101 papers in 2021 alone, indicating that digital storytelling research is receiving growing attention. We can thus infer that digital storytelling research output will maintain a clear growth trend for a considerable period in the future.

3.2 Analysis of Disciplinary Fields

Analyzing the disciplinary affiliation of relevant literature provides an effective way to explore digital storytelling’s application fields. The WOS database classifies literature by research field according to the disciplinary domain of the publishing journal, offering researchers a pathway for bibliometric analysis by discipline. This paper uses ITGinsight software to conduct statistical analysis

of all literature by disciplinary field, selecting the top 30 results by document quantity for presentation (Table 2). The findings indicate that the discipline with the most digital storytelling research is Education (1,456 papers), accounting for 19.67%, followed by Computer Science (1,254 papers), Communication (1,042 papers), Arts & Humanities—Other Topics (423 papers), and Social Sciences—Other Topics (404 papers). Digital storytelling has been applied across education, computer science, communication, literature, library and information science, and numerous humanities and social science fields, while simultaneously expanding into natural sciences such as medicine and engineering. Notably, library and information science literature numbers 287 papers, ranking seventh, demonstrating that a considerable number of scholars in library and information science have recognized digital storytelling and produced research 成果.

3.3 Analysis of Research Themes

This paper uses ITGinsight to conduct thematic analysis and keyword mining on the abstracts of retrieved literature to explore hotspots in digital storytelling research. ITGinsight can extract keywords from patent texts using linguistic rules and improved C-value metrics, then perform part-of-speech tagging, lemmatization, and termhood judgment, merging terms while avoiding most useless terminology and retaining required terms [11]. For example, keyword mining can be conducted using grammatical rules such as NN (common noun), NNP (proper noun), JJ+NN (adjective+noun), and JJ+NN+NN [12]. For processed keywords, ITGinsight enables co-occurrence and evolution (visualization) analysis of thematic words.

This paper uses ITGinsight for keyword mining on abstract texts, yielding 7,091 keyword results, which are arranged in descending order according to each keyword's C-value. We manually removed meaningless and irrelevant keyword groups and, due to space limitations, selected the top 75 entries for inclusion (Table 3). Based on each keyword's meaning, we manually categorized them and found that higher-ranking keywords can be divided into 21 categories: (1) Specific research objects: young person, older adult, young adult, etc.; (2) Social and interpersonal relationships: digital medium, social isolation, social network, etc.; (3) Digital technology: digital technology, big data, digital tool, machine learning; (4) Social management and public services: global governance, covid 19 pandemic, digital divide, etc.; (5) Entertainment: computer game, digital game, user experience, etc.; (6) Education and pedagogy: game based learning, digital literacy, digital education, higher education, etc.; (7) Digital therapy and mental health: digital intervention, mental health, digital health intervention, social isolation, etc.; (8) Social memory and historical cultural heritage: cultural heritage, cultural memory, etc.; (9) Medicine and physical health: autism spectrum disorder, intellectual disability, health promotion, etc.; (10) Social hotspots: black woman, sexual violence, climate change, etc.; (11) Literature and art: animated documentary, visual novel, conceptual art, etc.; (12) Economy: digital economy, business model, etc.; (13) Digital literacy and skills:

data literacy, digital literacy, online learning, digital literacy skill, digital competence, data visualization, etc.; (14) Communication and network technology: cyber threat, online learning, online help seeking, etc.; (15) Archives and museums: oral history, online museum, collective memory, electronic literature, etc.; (16) Information and knowledge dissemination: tacit knowledge, digital medium, digital platform, cognitive impairment, fake news, data privacy, story map, literary reading, knowledge transfer, prior knowledge, knowledge postproduction, etc.; (17) Libraries: digital library, research library, library system, public library, academic library, etc.; (18) Narrative theory and practice: interactive storytelling, story map, interactive digital narrative, etc.; (19) Religion: digital religion, Korean Buddhism, etc.; (20) Humanities and digital humanities research: digital humanity, digital history, Song Ci, medium archaeology, etc.; (21) Social science research: digital political, etc.

4. Application of Digital Storytelling in Library and Information Science

4.1 Theoretical Feasibility of Integrating Digital Storytelling into Library and Information Science Research

Based on analysis of digital storytelling literature, we can observe that digital storytelling researchers span multiple disciplines and fields, with research themes demonstrating considerable breadth. This indicates that digital storytelling possesses tremendous universality, applicable to academic research and practice in virtually all disciplinary domains, library and information science included.

Returning to narrative itself, despite being an ancient phenomenon, it was rarely studied as an explicit object for thousands of years. Until the first half of the last century, scholars from Russia, Germany, and France successively began researching narrative and narrative theory (some works did not explicitly use the term “narrative”). Finally, in 1966, narratology was officially established, making narrative an independent research object and narratology an autonomous discipline [13].

After narratology’s establishment, the concept of narrative was increasingly discovered by scholars and applied as a research tool. These scholars included not only literary theorists but also many from other fields, meaning narrative has moved beyond literature’s boundaries, crossed disciplinary borders, and entered research in other disciplines—a phenomenon termed the “narrative turn.” Similarly, the narrative turn has occurred in library and information science. Information and knowledge are important research objects in library and information science, and they are also the connotations carried by a story. In other words, information and knowledge are implicit within stories. From this perspective, narrative has clear intersections with library and information science, and digital storytelling, as narrative’s digital-era manifestation, can likewise be applied in library and information science. Some published literature already originates from library and information science, and digital storytelling’s appli-

cations and research objects also include libraries, information, and knowledge—the most explicit evidence that digital storytelling can be integrated into library and information science research.

4.2 Application and Practice of Digital Storytelling in Library and Information Science

Since incorporating digital storytelling into library and information science research is theoretically feasible, in what aspects can digital storytelling be applied? Through literature review, this paper finds that digital storytelling can be used in disciplinary theoretical research, library education, reading promotion, information and knowledge management, digital libraries, and multiple other aspects, which we will discuss in detail below.

4.2.1 Library Narrative The intimate relationship between libraries and narrative has long existed. Libraries are social memory institutions with rich collection resources, including numerous narrative textual information resources. In ancient times, people recorded what they saw and heard or certain stories to form books or other materials, some of which were placed in specialized institutions—the prototypes of libraries. Today, the emergence of the narrative turn has provided new opportunities for combining libraries and narrative.

Humans are important research objects in library science. However, in domestic library science circles, considerable scholarly attention focuses on information, facilities, technology, and other aspects [14], even pursuing and exploring the impact of various new technologies and environments on libraries, while paying less attention to humans as a crucial element. This phenomenon may partly result from society being in an era of rapid information technology development, where research on information, technology, and facilities aligns with historical trends. On the other hand, research on humans in libraries does face certain methodological limitations.

The introduction of narrative and digital storytelling may help research on humans in libraries to some extent. After all, narratology is a discipline studying humans, sharing common ground with library science in this regard. Therefore, using narrative methods to study humans in libraries appears to be a highly effective approach. Narrative can serve as a universal and extensive research tool and method for three main reasons: (1) Narrative is universal and ubiquitous; (2) Narrative is flexible and easy to operate, using limited means (scenes, characters, events, plots, and various narrative techniques) to serve diverse research and practices, as few things can transcend narrative boundaries; (3) Narrative is both the object of interpretation and commentary and a research method for both [15]. In libraries, besides collection information resources, numerous narrative texts and digital materials exist, such as management logs, meeting records, activity records, and training records, plus stories and memories of librarians and users, constituting data sources for library narrative research. These materials contain not only the entire library's development history and operational

processes but also human emotions, experiences, and values, providing a novel and interesting perspective for studying humans in libraries. Research findings from this angle also have very positive impacts on library construction and services.

Some domestic scholars have already focused on library narrative research. For instance, Li Guangzhu (2019) believes that using narrative methods to study library science can highlight humans' position among various library elements, facilitating clarification of relationships between elements with humans as the main thread, thereby reinterpreting and reconstructing library theory [16]. Indeed, humans play two crucial roles in libraries—as librarians and users. Using narrative methods to excavate both groups' behaviors, thoughts, and emotions will undoubtedly provide direct guiding impetus for library development.

As narrative's digital-era manifestation, digital storytelling provides tremendous support for library narrative research. The application of digital technology (such as video) can help researchers collect narrative materials intuitively and completely, such as video records of daily library work and activities, librarians' video logs, and brief user interviews. Additionally, library research findings can be produced in digital forms, such as creating promotional and instructional videos for viewing within libraries or for dissemination among libraries, enabling more intuitive identification of strengths and weaknesses in library construction and service processes.

4.2.2 Library Public Education and Reading Promotion As social public institutions, libraries bear the responsibility and function of public education, improving citizens' knowledge and cultural levels, and helping enhance citizens' reading and learning interests. This “education” is also reflected in narrative. Throughout history, stories have been highly effective educational tools. Since childhood, humans have lived among various stories, with parents and teachers using one story after another to teach how to live and to encourage goodness. Story influence plays an extremely important role in human growth, manifesting in character shaping and interest cultivation.

Libraries are not only information and knowledge repositories but also story repositories. Libraries contain numerous diverse stories that hold great attraction for humans, as everyone loves listening to stories. In conducting public education, libraries can fully leverage their advantages by using existing stories or creating appropriate stories based on collection resources for specific user groups, capturing their attention and thereby conveying implicit knowledge and information within stories to the public to achieve educational purposes. For the public, once they hear interesting stories, they may be motivated to learn the full story or related information, subsequently seeking corresponding books or materials to read. Stories are thus extremely important for library education and reading promotion.

Facing vast information resources, libraries are also trying various new technolo-

gies to solve numerous daily problems. “Information technology” and “story repository” have become two important labels for libraries, forming fertile ground for digital storytelling growth. Digital storytelling possesses interactivity, flexibility, and dynamism, making it more effective than traditional narrative methods in library education and reading promotion. As an educational tool, digital storytelling can directly interact with the public’s multiple senses, more intuitively conveying story content and emotional content. Story content supported by digital storytelling technologies such as images, audio, video, and the Internet is more intuitive than stories transmitted solely through text and oral narration. The public not only accepts knowledge content implied in digital stories but also experiences stronger narrative experiences than text-based methods, which is more effective for stimulating public learning and reading interest. From the perspective of digital storytelling’s flexibility, story creation becomes more “casual” —without changing the story’s knowledge connotation, it can be “adjusted” according to audience group characteristics. As previously discussed, scenes, characters, events, plots, and various narrative techniques in stories can all be adjusted as needed, providing excellent guidance for librarians to create suitable digital stories. For example, when facing children, to stimulate their interest, personified animals can be used as story characters, and games or animation forms can be employed for presentation—the same applies to other groups.

Digital storytelling as library public education and reading promotion practice has long existed abroad. Waddell (2018) discussed how academic libraries use digital storytelling as a teaching tool to help students improve information literacy [17]. Wood (2014) introduced a mobile game app called The Department of Hidden Stories (DoHS), designed to support public libraries in engaging students in interesting digital storytelling creation and helping them find related books in the library to cultivate reading interest [18]. Digital storytelling has unlimited potential in public education, and its creation is not subject to thematic limitations. For instance, during the ongoing COVID-19 pandemic, libraries can use digital storytelling to popularize epidemic prevention measures to the public (see IFLA’s YouTube subscription “Storytelling for Library Advocacy at the Time of COVID-19”).

Moreover, libraries conduct training sessions specifically teaching the public how to create digital stories. This not only helps the public use digital storytelling to create personal, business promotion, and social service management digital stories but also improves public information and digital literacy on this foundation. Some foreign libraries have begun providing digital storytelling guides to the public. For example, Penn State University Libraries provides digital storytelling production guides on its website (guides.libraries.psu.edu/digitalstorytelling) to help the public use digital technology to create and share their own stories. Similarly, Tulane University Libraries also provides digital storytelling creation guides to the public—using ArcGIS StoryMaps for digital storytelling creation (libguides.tulane.edu/arcgis_{storymaps}).

4.2.3 Information and Knowledge Management Information is the primary research object of information science, and stories contain various types of information, naturally becoming research content for information science. Fagiolani (2017) believes that narrative is an effective tool for knowledge dissemination [19], which has been verified throughout history. Since time immemorial, storytelling has been a means of transmitting knowledge. It was through narrative that our ancestors' experiences and knowledge of fire-making, planting, and hunting could be passed down before writing emerged, helping continue human progress. In the digital storytelling era, with digital technology's 加持 (support), the speed and scope of information and knowledge dissemination are incomparable to traditional methods. Interactivity, emotional content, and multi-sensory narrative experiences allow audiences to immerse themselves in narratives without limitations of time, space, or quantity, thereby completing knowledge dissemination.

Digital storytelling is not only used in information and knowledge dissemination but also serves as an excellent storage tool. Some ancient classics contain rich and interesting stories. Taking *Zhuangzi* as an example, the book is filled with bizarre stories that conceal Daoist thoughts and concepts the author wanted to convey—namely, wuwei (non-action) and naturalness. For these concepts, stories serve as highly useful containers that have helped store and transmit them for millennia. Digital storytelling is similar—creators can transform information and knowledge into digital storytelling works, such as documentaries and popular science videos, to facilitate knowledge dissemination and storage.

4.2.4 Digital Libraries With information technology use and popularization, people can obtain corresponding reading experiences without physically visiting libraries, leading to the emergence of digital libraries. In digital libraries, people can similarly read materials, learn knowledge, and even experience richer information and knowledge services. To better satisfy these public needs, librarians hope to employ more effective technologies and methods, and digital storytelling, as a tool for disseminating information and knowledge, can be fully applied in digital library construction. For example, Frohlich (2009) conducted surveys in some rural areas of Budikote in southern India to research information technology popularization and usage in developing countries. The survey used cameras and other equipment to interview local residents and form survey materials, then used selected audio-visual materials and photos to create authentic digital stories. They created a digital information repository system in local villages—a digital library of stories or StoryBank—and conducted audio-visual story creation and sharing activities to help locals disseminate information and improve information literacy [20]. Although this case is not a true digital library in the strict sense, librarians can still use it as a reference to digitize, visualize, and 趣味化 (make interesting) collection resources in digital storytelling form, attracting more readers to “read.” For instance, digital storytelling is an excellent auxiliary tool for displaying and promoting books or other information resources in digital libraries or for conducting online social education and training activities.

4.2.5 Historical Memory and Cultural Heritage Preservation Beyond fulfilling functions of public education and intellectual resource development, libraries also preserve and protect human cultural heritage. One type of digital storytelling is historical narrative, which can use digital technology and materials to create stories that reproduce past events and historical memories, helping people understand various facts in human progress. Preserving historical cultural heritage in digital storytelling form is also an effective protection method. For example, Conrad (2013), with assistance from Monterey Park Bruggemeyer Library in Southern California, used digital storytelling to record local history and ultimately shared the recorded results via video on the Internet for public viewing. He believed librarians are crucial for preserving historical memory and cultural heritage, and digital storytelling can become an important tool for librarians to protect historical memory and cultural heritage [21]. This tool can help promote communication between libraries and other institutions and individuals, collecting local interesting stories and historical information during this process and creating various digital stories. These stories can serve not only as new methods for education, service, and experience to publicize and display the region's profound historical and cultural accumulation to local and other regional populations but also contribute to local historical records in digital form.

In related foreign higher education, some schools have already incorporated digital storytelling as a professional or practical course in Library and Information Science (LIS). For instance, Alcala (2016) believes digital storytelling can be used in LIS online education and introduced a course— “Documenting Diverse Cultures and Communities” —to help information science students create digital stories about history, community, and archives [22]. San Jose State University's School of Information also offers a digital storytelling course aimed at teaching students skills to create digital stories for different groups. Digital storytelling is gradually integrating into academic research and practice across various fields, also existing within library and information science, and even becoming increasingly closely related to these disciplines.

In summary, digital storytelling's theories, forms, and characteristics align closely with library and information science, making it fully incorporable into research in both disciplines. Digital storytelling's entry into library and information science can provide effective and direct impetus for academic research, information and knowledge resource management, cultural heritage preservation, library education, reading promotion, and digital library construction, helping libraries communicate with the public and other institutions in newer and more attractive ways to better fulfill library functions. In conclusion, integrating digital storytelling into library and information science research and practice is highly necessary, and based on the associative characteristics between stories and information/knowledge, digital storytelling can play an even better role in library and information science. We believe the convergence of digital storytelling and library and information science represents an excellent opportunity for joint development and progress.

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Note: Figure translations are in progress. See original paper for figures.

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