



## Exploring AI's Role in Crafting Interactive Children's Stories: A Study on Poetry-Based Narratives

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### ABSTRACT

In this research, I explored how children interact with interactive stories based on poems. I was particularly interested in the potential of Artificial Intelligence (AI) to make these stories even more engaging. To understand this, I looked at how guardians felt about these interactive narratives and how children reacted to stories that were created with AI in real-time. I also wondered if AI could actually create a good children's story just from a set of images! To answer these questions, I used a few different approaches. First, I conducted an online survey with 80 guardians, asking them about their experiences with existing interactive poetry stories for children. Then, I observed a smaller group of 12 guardians as their children interacted with stories co-created with AI. These guardians also provided valuable feedback on the experience. Finally, I dug in myself and explored how AI could be used to create stories based on a set of images.

**Keywords:** Image-based storytelling, Poem adaptation, Interactive fiction, Narrative design, Language generation, Educational content creation

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### INTRODUCTION

This research has focused on creating interactive stories based on children's poetry. However, with the rise of accessible artificial intelligence (AI) technology over the past year, my research has expanded to explore how AI can be used in this process. The field of using AI to create children's fiction is still very new, and this paper aims to contribute to our understanding of AI's role in crafting children's literature and interactive stories. More importantly, I hope to encourage further discussion in this area. This paper addresses the problem of understanding and evaluating the experiences of readers with interactive narratives based on children's poetry. This includes both traditional stories and those developed with AI assistance. A large part of the discussion is based on empirical studies, which explore these experiences in detail.

The research is grounded in several theoretical frameworks, including experience marketing, service-dominant logic, game development, and Human-Centered AI. These frameworks help to understand the following key points: Interactive narratives based on children's poetry can be effective educational and promotional tools, sparking children's interest in poetry and literature. Developing interactive narratives requires a deep understanding of the user's experience. The perceptions of children's guardians, who control what content children consume, are crucial in developing these narratives. It is important to compare user experiences with both traditionally and AI-developed narratives. Given the limited research in this area, my studies take an exploratory approach to uncover both expected and surprising findings. Experience marketing and service-dominant logic provide a solid foundation for understanding user experiences, and incorporating a game development perspective can enrich this understanding. Additionally, a Human-Centered AI approach offers valuable insights into the user experience with AI-generated content.

The gap in existing research is summarized in Table 1, and the research questions this paper aims to address are listed in Table 2.

Table 1

Theoretical perspective	Focus on empirical research	Gap in existing research
Experience marketing and service-dominant logic highlight the concept of "value-in-use" - the idea that the value provided by a producer is determined by the customer's ability to extract value from the product, positioning the customer as a co-creator of the offering, and highlighting the pivotal role of the customer journey	Value-in-use - Customer journey - Empowering customers to become "prosumers"	There is a lack of understanding regarding the educational and promotional potential of interactive narratives based on "old" poetry, and its impact on children's interest in poetry and literature. Although the role of AI in the arts has been examined in existing literature, the specific area of co-creating children's narratives with AI has yet to be explored. Given the rapid advancement of artificial intelligence, it is plausible to suggest that key stakeholders in the literary field – such as authors, researchers, publishers, and readers – may not fully understand the specialized skills and knowledge required to effectively engage with AI. This paper aims to provide preliminary recommendations and insights to bridge this knowledge gap.
The angle of the game highlights the significance of interactivity and the digital setting, prompting an investigation into two essential constructs: telepresence and player agency	Interactivity of narrative - Telepresence - Player agency	The literature currently lacks a comprehensive analysis of telepresence and player agency within the literary domain, especially in the context of interactive narratives.
Human-Centered AI approach, which allows for both a high level of human control and extensive automation, aims at Reliable, Safe, and Trustworthy (RST) human-computer interactions	Human control in the product co-created in real time with AI	This paper offers suggestions on how the generation of prompts for AI can ensure a high level of human control in the context of AI-assisted storytelling.

Table 2

Research question	Empirical studies
<b>RQ1: What are the experiences of readers, specifically children's guardians, with interactive narratives based on children's poetry?</b>	The trio of studies focused on evaluating website-based interactive games, which incorporated both text and images. These games drew inspiration from Polish children's poems, and the assessment was conducted through the feedback provided by respondents.
<b>RQ2: How do children's guardians experience interactive stories co-generated in real-time with artificial intelligence?</b>	The study utilized a prompt submitted by participants to ChatGPT, harnessing generative artificial intelligence to craft an interactive narrative in real time. Throughout this process, the AI offered choices to the readers (participants), enabling them to steer the story's progression. The foundation of the prompt, and thus the ensuing narrative, was rooted in the children's poetry.
<b>RQ3: Is it possible to create a satisfying narrative from a specific set of images through the use of AI technology?</b>	The procedure entailed providing ChatGPT with an array of images. From this visual dataset, the artificial intelligence system generated a narrative, constructing a storyline that was influenced by the content and context of the provided images.

### THE CHANGING LANDSCAPE OF STORYTELLING: AI AND THE CO-CREATION OF NARRATIVES

Artificial intelligence (AI) is rapidly transforming many aspects of our lives, and the creative realm is no exception. The emergence of chatbots like ChatGPT, Bing, and Bard has introduced a novel tool for content creators, including writers, screenwriters, and game developers. These tools have the potential to significantly alter the way stories are conceived and developed. This paper explores the evolving roles of writers and readers in the process of co-creating narratives with AI. The research is particularly interested in the relatively new and exciting application of AI as a collaborator in crafting stories for children. Traditionally, the story creation process can be broken down into two distinct phases: content creation and content delivery. AI has the potential to be integrated into either of these phases, leading to two distinct scenarios. In the first scenario, AI acts as a writer's tool. The writer uses AI to

generate content that will ultimately be delivered and consumed by the reader without any further AI assistance. This might involve generating a story for publication in a book or creating interactive narratives for online platforms. In this case, the reader is likely unaware (and often will be) that AI played a role in the story's development. Essentially, AI functions similarly to software used for editing or developing the story. The second scenario presents a more collaborative approach. Here, the writer creates a "prompt" that serves as the starting point for the AI. The reader then interacts with the AI in real-time, and the AI generates the narrative in response to the prompt and the reader's choices. This is particularly relevant for interactive narratives, where the reader's decisions influence the story's direction. However, the writer's role becomes more limited in this scenario. While they can create the initial prompt, they relinquish control over the story's final form. The content consumed by the reader can be "constantly new" and potentially deviate from the writer's original vision. For successful AI implementation in narrative creation, a well-crafted prompt is crucial. This prompt needs to provide all the necessary "input" for the AI to generate a cohesive and engaging story. Understanding the elements that constitute a "good narrative" is essential for crafting effective prompts. This research focuses on narratives designed for young children and their guardians, with a particular emphasis on genres like fables, children's stories, and children's poetry. There's a vast amount of existing literature exploring the characteristics of a good narrative, ranging from author manuals to academic publications. These resources highlight various aspects that contribute to a successful story, including captivating plot structure, well-developed themes, and interesting characters. When considering interactive narratives, however, the criteria for effectiveness expand even further. Here, factors like logical game progression and a strong sense of player agency become equally important. The research argues that fables hold significant potential as a foundation for developing new, interactive narratives for children. Several factors contribute to this. Firstly, fables are typically concise, a feature that resonates with young audiences accustomed to the fast-paced digital world dominated by short videos and social media posts. Secondly, fables often blend emotional appeal with animal protagonists and easily understandable moral lessons, making them relatable and engaging for young readers. Furthermore, fables traditionally follow a specific structure, which simplifies the process of adapting them into interactive narratives. Additionally, fables often utilize anthropomorphic animals as characters, providing contemporary creators with a ready-made set of recognizable characters to build upon. However, expressing emotions effectively remains crucial for engaging young readers. Studies have shown that scenes where characters express emotions attract children's attention and foster a deeper connection with the story.

In conclusion, this section has explored the evolving roles of writers and readers in the context of co-creating narratives with AI. The importance of crafting well-defined prompts for AI has been emphasized, along with the potential of fables as a foundation for interactive children's narratives. The following sections will delve deeper into the potential of AI for creating children's literature, share the findings from the conducted studies, and discuss the implications for the future of storytelling for children.

### **INVESTIGATING INTERACTIVE POETRY GAMES FOR CHILDREN: A LOOK AT THREE STUDIES**

This research explores the potential of interactive narratives based on poems for engaging young readers. The study focused on developing and evaluating games inspired by children's fables and poems. The findings come from three separate studies conducted over the past three years, with the results of the latest study published in early 2023. All three studies involved analyzing responses from guardians of young children (aged preschool to early elementary school). These guardians played the interactive games themselves, acting as if they were the child. Afterward, they filled out questionnaires designed to gauge their impressions of the games. None of the studies involved directly testing the games with children themselves. The most recent study centered on a game called "Little Bee," a logic puzzle that incorporated text and images inspired by a poem titled "Bee and Little Dove" by Stanisław Jachowicz. "Little Bee" was made freely available online in February 2023, and guardians were recruited to evaluate the game through an online questionnaire in the following months. Eighty guardians participated in total. The questionnaire asked guardians about various factors, including their preferred methods for introducing children to poetry, their likelihood to recommend interactive poetry to others, how educational they found the game, how immersed the child felt in the poem while playing, the child's sense of agency within the story, the quality of the game's visuals and narrative, and how engaging the game was for children. Across all three studies, some consistent trends emerged. The first was the appeal of interactive games. Most guardians believed children would be more interested in engaging with poems through games compared to traditional text formats. While some guardians still preferred traditional text, they acknowledged the potential for games to attract young readers to poetry. Positive responses highlighted the engaging nature of the games, their appeal beyond traditional poetry formats, and their ability to leverage new technologies. Negative responses expressed concerns about excessive screen time, the need for adult supervision, and a potential preference for traditional poetry formats among some children (Table 3). The second key finding was deeper immersion. Overall, guardians felt that interactive games led to a deeper sense of immersion in the poem's world compared to simply reading the text (Table 3). This suggests that the interactive elements helped children connect more fully with the story. The third finding was increased agency. The studies also indicated that interactive narratives significantly increased the child's sense of

agency within the story (Table 4). Guardians felt that children felt more empowered to influence the events of the poem while playing the games. These studies offer valuable insights into the potential of interactive narratives for introducing young audiences to poetry. While some guardians remain hesitant about screen time and the potential drawbacks of digital experiences, the overall findings suggest that interactive games can be a successful tool for promoting reading and poetry engagement among young children. There's also room for further development, with some guardians mentioning a desire for even more interactivity within the games. Overall, this research points to a promising future for interactive poetry experiences designed to capture the imaginations of young readers.

Table 3

Statement	Positive evaluation of statements
The game [skill game] allows young readers to feel more immersed in the events described in the poem "In the Forest" compared to reading the traditional text of the poem	68%
The game [interactive story] allows young readers to feel more immersed in the events described in the poem "In the Forest" compared to reading the traditional text of the poem	79%
The game allows young readers to feel more immersed in the events described in the poem "Poodle and Hound" compared to reading the traditional text of the poem	92%
<b>The game allows young readers to feel more immersed in the events described in the poem "Bee and Little Dove" compared to reading the traditional text of the poem</b>	<b>79%</b>

Table 4

Statement	Positive evaluation of statements
The game allows young readers to feel that they have an impact on the events described in the poem "Poodle and Hound" compared to reading the traditional text of the poem	92%
<b>The game allows young readers to feel that they have an impact on the events described in the poem "Bee and Little Dove" compared to reading the traditional text of the poem</b>	<b>69%</b>

### AI CO-CREATES INTERACTIVE POETRY ADVENTURES FOR YOUNG READERS

This section explores a new approach to interactive storytelling for children. The study utilized an AI tool called ChatGPT to co-create interactive narratives based on poems. Specifically, the poem chosen as a foundation was "Bee and Little Dove" by Stanisław Jachowicz. In this project, I explored the potential of AI for creating interactive stories based on poems for children. The poem I chose to start with was "Bee and Little Dove" by Stanisław Jachowicz. First, I created a prompt specifically designed to guide another AI tool, ChatGPT, in generating interactive stories based on the poem. Next, I recruited twelve participants (eight women and four men) to experience these interactive stories. I provided them with the prompt, along with introductory instructions, and they interacted with ChatGPT using it. Essentially, their choices within the story shaped the unique narrative each participant experienced. Imagine a choose-your-own-adventure book powered by AI! Afterward, the participants filled out a questionnaire to gauge their experience. The questionnaire included both open-ended questions about their overall impressions and specific questions about three key aspects of the stories: content, interactivity, and emotional impact.

Overall, this study demonstrates the exciting possibilities of AI for creating interactive narratives based on poems. While there's room for improvement, particularly in tailoring the language to a younger audience and expanding the decision points within the stories, the initial results are encouraging. This approach has the potential to make poetry more engaging and accessible for a new generation of young readers, sparking their imaginations and opening doors to a world of learning and discovery.

The Implementation of AI in Creating the Narrative Based on the Given Set of Images In a study focusing on the game "Little Bee," we explored how AI can assist in crafting interactive narratives using both text and illustrations. The manually drawn illustrations received positive feedback from over 80% of respondents in each study. This raised an intriguing research question: Can AI effectively use the same set of images to create narratives that still relate to the same poem? In this scenario, AI is used as a tool by the author of the interactive story, while the end-user (reader) remains unaware that the story's text was generated by AI. As the creator of the narrative, I conducted an experiment in early November 2023. For this experiment, I provided ChatGPT with four images previously used

in an earlier study and the text of "Bee and Little Dove" by Stanisław Jachowicz. The goal was to create a narrative concept based on these images and the poem. Reflecting on this experiment, I found several key insights: First, despite the illustrations being in a cartoon-like style, ChatGPT accurately described the images, identifying the main characters (bird, bee, fox, hare) and their surroundings (e.g., river, flowers, carrot). After a few iterations, ChatGPT produced a story that could be positively evaluated in various dimensions. In terms of content, the story included educational elements that aid in a child's development. It presented moral values clearly, with passages like, "And so, the tale teaches us that kindness is never forgotten and that helping one another, no matter how small the deed, can forge bonds that last a lifetime." The narrative effectively conveyed the poem's themes of danger, rescue, gratitude, and mutual aid, as illustrated when the bee saves the dove after being saved herself. The language used was appropriate and engaging for children, although it could be enhanced with more onomatopoeia. Regarding story engagement, the pace and flow maintained the child's attention. The descriptions of the meadow and the animals stimulated imagination: "a lively meadow filled with the bustling of tiny creatures and the sweet scent of spring." The settings and scenes were captivating, though they could benefit from more sensory descriptions, such as textures, colors, sounds, and smells. In summary, while there are potential shortcomings in AI-generated stories, these can be addressed through subsequent rounds of refinement. The experiment underscored the importance of crafting well-thought-out prompts to enhance the quality of AI-assisted narratives.

### DISCUSSION

In our study, we created interactive narratives using simple games with basic mechanics and a few images based on old Polish children's poetry. Despite their simplicity, the results showed that children's guardians saw these interactive narratives as an effective way to promote reading and as good educational material. Our third study supported earlier findings and identified two main groups of guardians: those excited about new media and those who preferred traditional methods. Both groups recognized that children are inevitably moving towards digital media.

Our studies also highlighted that interactivity and play enhance the reader's experience. When looking at key aspects like telepresence (feeling like you're part of the story) and player agency (feeling like you can influence the story), we found these concepts apply not just in games but also in experiencing poetry. Respondents reported that they or their children felt like they were part of the poem's narrative and could influence its events. This shows that even basic interactivity can make readers feel involved in the story, and sometimes just the appearance of interactivity is enough (Riedl et al., 2011).

Next, we examined how children's guardians experience interactive stories created in real-time with AI. Pierosara (2022) pointed out a key difference between human storytelling and AI-generated stories. While AI can follow predefined patterns, true narrative autonomy is a human trait. I agree with this view. Our studies suggest that AI can create interactive narratives that meet guardians' expectations when given precise input about story length and characters. However, there is a concern about not knowing exactly what narrative the AI will generate in real-time, which is different from traditional storytelling where the author knows how the story will unfold.

This uncertainty raises an issue we had not considered before: ensuring children are not exposed to inappropriate content during real-time interactions with AI. It's crucial to protect children from harmful content, but it's challenging to guarantee AI will always respond appropriately. Currently, the best solution seems to be having guardians supervise AI interactions. Inspired by the Human-Centered Artificial Intelligence (HCAI) concept, I conducted an experiment to test AI's response to a potentially harmful prompt. Contrary to ChatGPT's usual suggestions, I included a covertly dark sentence aimed at harming the protagonist. ChatGPT's response highlighted the importance of maintaining a child-friendly narrative, reinforcing the need for careful supervision.

Finally, we explored whether it's possible to create a satisfying narrative for children from a specific set of images using AI. Studies like those by Nand et al. (2019) and Huynh et al. (2021) highlight the importance of images in educational games. Our studies found that images play a crucial role in children's narratives, and their absence in AI-generated stories is a significant drawback. In our experiment using Stanisław Jachowicz's poem "Bee and Little Dove," the AI successfully developed characters and settings based on the provided images, aligning with the poem's themes and creating a satisfying narrative. Reflecting on the characteristics of our respondents, most were young adults comfortable with digital technology, which likely influenced their positive reception of interactive narratives. This demographic mirrors the diversity of potential readers, suggesting that those adept with technology may appreciate AI-assisted storytelling.

### CONCLUSION

When we think about developing interactive narratives, we often imagine high-tech projects managed by IT professionals. However, AI makes this accessible to average users, including parents, guardians, and educators. Our studies suggest that interactive narratives based on poetry can benefit education and promote reading. These narratives can be simple yet effective, creating positive user experiences. Future research will delve into creating new narratives from classic children's poetry, focusing on integrating chatbots and text-to-image AI technologies to enhance visual storytelling. Ensuring that AI-generated content remains child-friendly and safe is paramount.

Expanding the research to explore a wider array of children's narratives will help us understand AI's varying impacts and applications in children's literature and storytelling.

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