Generative AI

IMAGINE

WrightHere

Interactive

3D

WrightHere: Supporting Children's Creative Writing with AI-Infused Interactive 3D Environment

System Design & Research Questions

WrightHere is a **generative AI-infused writing system** that generates interactive 3D environments of the written story. Users can explore environments, create and interact with characters, and gather inspiration to facilitate their creative writing. The system enables easy switching between writing and interactive exploration with two interconnected modes: **Writer Mode and Dive-in Mode.**

This prototype, through user studies, demonstrates how integrating AI-generated 3D environments with writing interfaces enhances children's creative writing engagement and output.

1. How do writers explore **generative 3D environments** in creative writing?
2. How can these environments be integrated into a system to support **continuous cycles** between **imagination** and **composition** in creative writing?
3. How can we ensure that inspiration gained from these rich environments effectively translates into **written narrative**, preventing ideas from remaining as abstract thoughts?

Writer Mode

In Writer Mode, which supports the translating stage, users write their story in the Main Editor. Each paragraph automatically generates a 3D scene, shown as thumbnail images beside the text. The system provides Story Materials of dialogues, characters, and memos that users can incorporate into their writing through a co-writing function. These materials come from their interactions in Dive-in Mode.

Dive-in Mode

Dive-in Mode facilitates the planning stage by letting users enter and explore the 3D environments generated from their paragraphs. Here, users can create and converse with characters, and capture ideas as memos. The system generates 3D characters based on users' descriptions, enables dynamic conversations through LLM with text-to-speech output, and saves memos along with their visual context. All these interactions are stored as Story Materials that become available when users return to Writer Mode by pressing the ESC button.

User Study

Participants	Age	Gender	School Level
P1	9	Female	Elementary
P2	10	Male	Elementary
P3	12	Male	Elementary
P4	12	Female	Elementary
P5	14	Female	Middle School
P6	18	Female	High School

The system successfully supported creative writing by helping participants externalize their imagination and develop richer narratives. Participants expressed strong engagement with the system. P2 noted their continued motivation to develop stories: "It is my story, but I want to know what happens next. It's fun." P3 also noted how the system's understanding seemed to deepen as the story progressed, providing "the exact inspiration needed at a specific point." P5 particularly highlighted the system's role in creative support, describing it as "feeling like pulling out the imagination from inside my head." We examined how participants used WrightHere through detailed analysis of participant quotes and behavioral observations, and discussed the benefits and possible improvements of the system.

Main Findings

(1) Exploring dynamic 3D environments facilitates narrative development

- Generating Story Scenes and entering into them were the most frequently utilized features, with participants naturally progressing their narratives through spatial exploration.
- Participants would start with simple premises ("went camping"), then develop them further ("went camping with friends," "went camping with friends when a monster appeared").

(2) Character creation established foundations for interactive narrative engagement

- Although character generation involved noticeable latency, participants valued how these materialized characters served as anchors for dialogue and interaction.

(3) Character interactions catalyze both emotional resonance and story progression

- Emotional engagement and story development emerged naturally through character conversation.
- P1 created a new 'girl' character as a companion after the rabbit character expressed loneliness
- P3 spontaneously contemplated a monster's sad history upon encountering it in a vacant space.

(4) Story materials bridged ideation and writing while maintaining creative agency

- The system effectively helped translate imagination into written content.
- P2 actively used the dialogue materials for co-writing, keeping useful segments while discarding others.

Discussion - Apple Vision Pro Integration

(1) How does the relationship between immersion and creative writing change when implementing WrightHere in an Apple Vision Pro environment?

(2) What impact do physical interactions and gestures in a spatial computing environment have on children's storytelling abilities?

(3) How might character interactions in spatial computing create richer narrative experiences compared to traditional interfaces?

▲ WrightHere's two distinct but interconnected modes: Writer Mode and Dive-in Mode. In Writer Mode, users create stories in the (B) Main Editor, which generates corresponding 3D (A) Story Scenes. By clicking on the scene, users enter Dive-in Mode where they can interact with characters through (G) conversation, (H) creating memos, or (I) adding new characters. These interactions are saved as (C) Story Materials and displayed as (D), (E), and (F). Users can drag these Story Materials into the (B) Main Editor for co-writing suggestions. The (J) Main Editor remains accessible during Dive-in Mode, allowing users to seamlessly switch between different Story Scenes and continue writing.

▲ An example use case scenario of creating Christmas adventure story, supporting cyclical process of storytelling.

Video Demo / LinkedIn

WrightHere

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