

ARtistic Tales: Enhancing Reading Engagement and Accessibility for Children through Augmented Reality

Yihan Luo

School of Cinematic Arts
University of Southern California
Los Angeles, CA, USA
luoyihan@usc.edu

Abstract

Reading can be challenging for children with dyslexia due to the cognitive demands of decoding text and the lack of engaging multisensory support. While augmented reality (AR) has shown promise in education for improving motivation and retention, less is known about how specific design features—such as visual storytelling, multimodal feedback, and gamified scaffolding—shape engagement and learning outcomes for children with diverse literacy abilities. To explore this, we designed *ARtistic Tales*, an AR-powered interactive reading application that animates storybook characters, synchronizes narration with text, and integrates comprehension quizzes, spelling exercises, and token-based rewards. The system was developed to enhance reading accessibility and enjoyment among children aged 6–10, including those with dyslexia. This study provides early insights into how AR storytelling and inclusive interaction design can foster reading engagement and learning confidence for neurodiverse children.

CCS Concepts

• Human-centered computing → Augmented reality.

Keywords

Augmented Reality, Learning Experience, Dyslexia, Interactive Storytelling, Educational

ACM Reference Format:

Yihan Luo. 2025. ARtistic Tales: Enhancing Reading Engagement and Accessibility for Children through Augmented Reality. In *Adjunct Proceedings of the 2025 International Conference on Human-Engaged Computing (ICHEC Adjunct 2025)*, November 21–23, 2025, Singapore, Singapore. ACM, New York, NY, USA, 3 pages. <https://doi.org/10.1145/3775021.3787088>

1 Introduction

Reading is a foundational pathway to learning and imagination, yet many children experience persistent barriers in decoding and comprehension—particularly those with dyslexia, a neurodevelopmental condition that affects phonological processing, orthographic mapping, and working memory. Dyslexic readers often struggle to connect sounds and symbols, leading to frustration and disengagement from text-based learning environments. Despite significant advances in literacy pedagogy, traditional instruction remains

largely linear and visually dependent, offering limited multimodal scaffolding or adaptive feedback for diverse learners.

To address these challenges, designers and educators have explored multisensory and technology-assisted reading tools that combine visual, auditory, and kinesthetic cues to strengthen word recognition and comprehension. Within this space, Augmented Reality (AR) has emerged as a promising medium for literacy development. By overlaying digital content onto physical storybooks, AR transforms reading into an interactive and embodied experience, providing spatial context, motion, and audio feedback that reinforce textual meaning. Prior research has demonstrated that AR storybooks can increase children’s attention, comprehension, and motivation by blending narrative immersion with playful interaction. However, most studies focus on general engagement outcomes rather than examining how specific design mechanisms—such as accessibility customization, multimodal feedback, and adaptive pacing—shape learning experience and emotional connection.

Building on these insights, this paper introduces *ARtistic Tales*, an AR-powered storytelling system designed to make reading more inclusive, multisensory, and participatory. The system integrates inclusive visual design, adaptive narration, and interactive comprehension features to reimagine storybooks as living spaces where children can explore, listen, and respond. *ARtistic Tales* investigates how accessibility-driven and art-based interaction design can foster engagement, empathy, and agency in early literacy experiences. Situated at the intersection of design research and human–computer interaction, the project contributes to ongoing discussions in human-engaged computing by exploring how AR can mediate creativity, inclusivity, and embodied learning in children’s reading environments.

2 Design Contributions

2.1 Inclusive Interaction Design

The interface uses dyslexia-friendly fonts, color-contrast adjustment, and synchronized audio narration to support different reading abilities. Users can modify the text size, reading speed, or switch to full narration mode.

2.2 Multisensory Engagement

Animated storybook characters are projected into the real environment of the user using AR (see Fig. 1). Children can see, hear, and interact with narrative elements, providing additional cues that support decoding, comprehension, and memory—particularly beneficial for dyslexic readers.



This work is licensed under a Creative Commons Attribution 4.0 International License. *ICHEC Adjunct 2025, Singapore, Singapore*
© 2025 Copyright held by the owner/author(s).
ACM ISBN 979-8-4007-2312-4/25/11
<https://doi.org/10.1145/3775021.3787088>



Figure 1: A screenshot of ARTistic Tales.

2.3 Gamified Learning Loop

To sustain engagement, ARTistic Tales integrates a structured yet playful gamification system. Children can set a daily reading target—such as completing a story chapter or achieving a set number of correct quiz answers. After finishing each story, the system generates interactive quizzes that test comprehension, vocabulary, and emotional recognition through mini-games such as drag-and-drop matching, word tracing, and choice-based storytelling.

Successful performance awards medals based on accuracy and reading consistency. A progress dashboard visualizes daily streaks and accumulated medals with colorful badges and animated feedback. As children collect medals, they unlock new storybooks or

AR world themes, introducing a sense of progression similar to narrative-driven games.

Beyond entertainment, this gamified structure encourages self-regulated learning, rewarding persistence and comprehension rather than speed. By balancing extrinsic incentives (medals, unlockable content) with intrinsic motivation, ARTistic Tales helps children view reading as a joyful, engaging routine rather than an academic obligation.

Acknowledgments

The author thanks project collaborators Yi Zong and Robert Li for their support. The author also acknowledges the assistance of ChatGPT in refining the manuscript’s clarity and language.

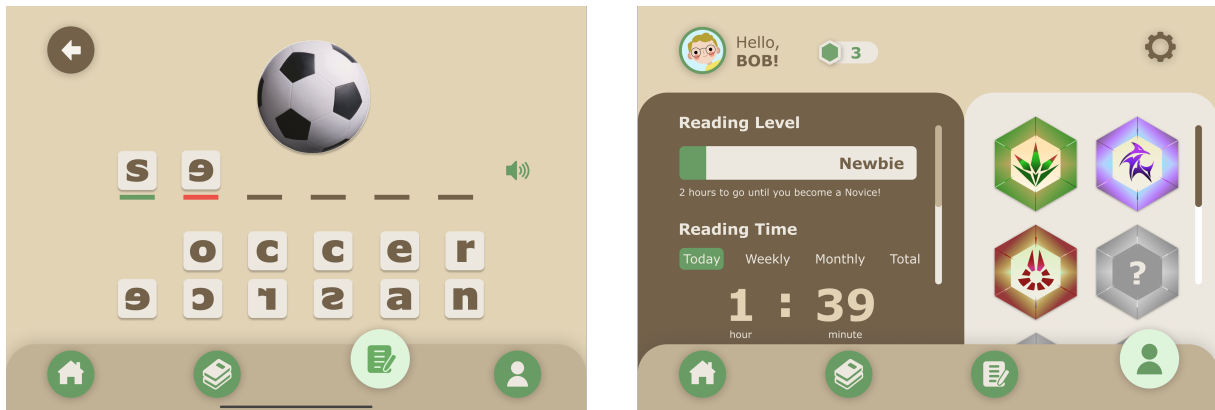


Figure 2: Quiz Interface of ARTISTIC TALES.