

Universiti Teknologi MARA

**NarrateAR: An Augmented Reality-
Based Storytelling Application for Early
Childhood Learning**

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ABSTRACT

In early childhood education, traditional storytelling techniques frequently fail to hold children's interest and satisfy their literacy and engagement requirements. To address this, NarrateAR, a mobile application based on augmented reality (AR), was created for kids ages 4 to 6 with the goal of improving literacy, comprehension, and engagement. The application turns traditional storytelling into an immersive experience that is in line with today's children's digital habits by incorporating 3D AR models, interactive matching and drag-and-drop games, and synchronized text and audio narration. NarrateAR was developed using the Rapid Application Development (RAD) methodology and integrates iterative design and user feedback to assist kindergarten teachers and children. By projecting augmented reality characters into the real world, it provides a means of enhancing storytelling sessions in the classroom, promoting engagement and enhancing memory. Six kindergarten teachers from a few kindergartens such as *Tadika KEMAS Kampung Wakaf*, *PASTI Kampung Wakaf*, *Taska Umi Arina* and Little Ones Eduworld participated in usability testing using the System Usability Scale (SUS), and the results showed that users were highly satisfied with the app's usability and integration. The majority of the kids at *Tadika KEMAS Kampung Wakaf* were able to use the NarrateAR on their own and stayed very interested during observation sessions, demonstrating the application usefulness in a real kindergarten environment. However, limitations include support only for ARCore-enabled Android devices, limited story content, and English-only availability. Future improvements will include features for teacher feedback, multilingual support, customizable game difficulty, culturally relevant content like Islamic stories, and iOS compatibility. Overall, the results indicate that NarrateAR is a useful tool for improving storytelling in early childhood education, especially in kindergarten settings where learning must be dynamic and interesting.

Keywords: augmented reality, storytelling, children learning, mobile application

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CHAPTER 1

INTRODUCTION

This chapter consists of a comprehensive overview of the project, including the background study, problem statement, research questions, objectives, scope, significance, expected outcomes, and limitations of the study. It offers an overview for understanding the motivation behind developing a storytelling application based on augmented reality (AR), specifically targeted at children between the ages of 4 and 6 and kindergarten teachers. The chapter start with an overview of background study, highlighting the value of storytelling in early childhood education and the expanding impact of digital technology on children learning habits. It also describes the issue that this project seeks to resolve, specifically the absence of engaging and interactive storytelling methods suitable for digitally inclined children. The research questions and objective that direct the application's development are also presented in this chapter. The scope of the project is defined, including the target users, content coverage, and testing locations. The project's significance is also covered, emphasizing the possible advantages for both children and kindergarten teacher. To give a realistic picture of what the project seeks to accomplish and the limitations involved in its development, the expected outcomes and project limitations are described.

1.1 Background of Study

Storytelling has long been recognized as a major approach to helping children develop creativity, learning their language and thinking in a critical way. According to Şimşek (2024), it has been shown that reading storybooks improves language proficiency and academic performance. However, today many children have become used to digital technology. Traditional storytelling