

# Immersive Storytelling: Exploring the Potential of Virtual Reality to Develop Empathetic Awareness Among Students

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## Abstract

This study assesses immersive VR's impact on empathy in education using the Kokoda VR and the Kokoda 360° video in teaching Australian WWII history. Focusing on high school students familiar with the curriculum and international university students without prior knowledge, the research aims to explore VR's effectiveness in enhancing empathetic understanding. Results show that students using Kokoda VR exhibit significantly higher empathy levels than those experiencing the 360° video, highlighting VR's potential as an important tool for engaging historical narratives and emotional learning in diverse educational contexts.

## Keywords

Immersive VR, empathy, immersive storytelling

## 1. Introduction

The Kokoda VR and Kokoda 360° video are two educational tools created to present a pivotal moment in Australian WWII history. These tools, aligning with the Australian curriculum, offer a narrative-driven experience with the user actively participating in the events of the Kokoda campaign. The aim of these tools is to develop an awareness of the significance of Kokoda, and also develop a greater empathetic awareness of the experience. Students get to experience the environment and living conditions of the soldiers, nature of the fighting, food shortages and supplies and what the soldiers were thinking based on the historical extracts from Australian and Japanese soldiers' diaries and notebooks.

Research has shown that immersive technologies improve knowledge retention and engagement [1][2][3]. In this paper, the focus is on the effects of immersive VR storytelling on empathy on students. The study seeks to assess the broad applicability of VR for increasing empathy as part of the learning process, and to enhance the generalizability of the findings.

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## 2. Methodology

The Kokoda VR and 360° video were designed to fit Australian classroom schedule. It was condensed into a 40-minute session covering 12 key scenarios. The Unity engine was used to create interactive virtual environments, with Kokoda VR offering a particularly immersive experience with high realism via VR headsets with 6 Degrees of Freedom. The study engaged 79 students from diverse Australian high schools (49 students) and an Indian university (30 students), whose students spoke English and were unfamiliar with the Kokoda Campaign. The immersive VR experiment required a minimum 4x4 ft space for safe VR use. A post-test tailored Kokoda empathy survey focused on the students' emotional responses to the characters and events of the Kokoda VR were conducted.

## 3. Results and Conclusion

An independent t-test was used to compare empathy scores between the experimental and control groups involving all participants from high school and university. The results of the experiment show that a VR learning environment with an immersive linear narrative can increase the empathy (mean of 4.51 out of 5) compared to the same experience viewed in 360° video (mean of 4.0) with a Cohen D effect size of 0.85. Empathy for university participants (both experimental and controlled) has highest mean scores (4.75 and 4.19, respectively) compared to all other groups.

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