

# Time Travel Diaries: Exploring Gerontechnology for Reminiscence in Older Adults with Dementia

## Introduction

Gerontechnology, the convergence of gerontology and technology, represents a transformative frontier in aging care solutions. Hong Kong's escalating dementia prevalence within Hospital Authority settings demands innovative approaches beyond traditional reminiscence therapy limitations. This study explores an innovative "Time Travel Diaries" gerontechnology platform that integrates immersive VR environments with culturally relevant local experiences from participants' past. This technology-enhanced intervention aligns with HA's digital transformation initiatives and delivers personalized therapeutic solutions with potential for broader clinical implementation across dementia care settings

## Objective

To evaluate a novel gerontechnology-enhanced reminiscence intervention targeting:

- (1) cognitive engagement through culturally relevant VR environments;
- (2) depression reduction via interactive multimedia storytelling;
- (3) communication enhancement through technology-mediated social engagement; and
- (4) quality of life improvement using personalized digital memory preservation.



## Methodology

This pre-post interventional study recruited 31 originally community-dwelling older adults (mean age 77.8±6.2 years, with mild to moderate dementia, Montreal Cognitive Assessment Hong Kong version (HK-MoCA) score ≤21) for eight progressive 60-minute sessions over four weeks. The "Time Travel Diaries" protocol featured:

- (1) Memory Lane Mixer with interactive panels and Memory Bingo;
- (2) Digital storytelling using photo-voice methodology;
- (3) Immersive VR life reminiscence;
- (4) Interactive childhood memory book creation;
- (5) Music-triggered reminiscence using classic Cantopop and historical TV programs;
- (6) VR culinary journey through traditional cooking environments;
- (7) Memory Box cognitive gaming with touchscreen technology;
- (8) Personalized "Time Capsule" creation integrating multimedia narratives with family involvement

Registered nurses delivered standardised protocols to ensure intervention fidelity.

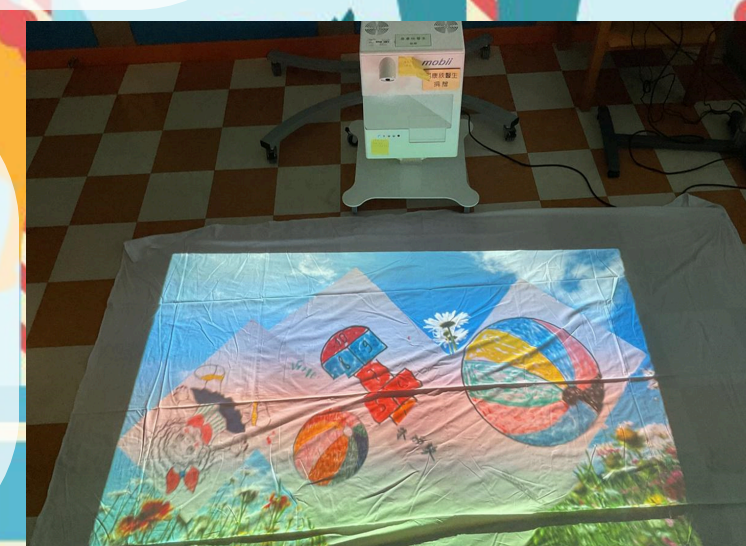
Validated assessments include: HK-MoCA, Quality of Life in Alzheimer's Disease (QoL-AD), Geriatric Depression Scale (GDS-15), Holden Communication Scale (HCS).



## Result

Gerontechnology interventions demonstrated significant therapeutic efficacy in different aspects:

- Stable in cognitive functioning
- Significant improvement in depressive symptoms
- Strengthening skills in communication
- Major enhancement in quality of life



Assessment	Mean difference (in score)	P value	Cohen's d
Montreal Cognitive Assessment Hong Kong version (HK-MoCA)	0.74	0.095	0.58
Geriatric Depression Scale (GDS)	1.323	<0.001	0.752
Holden Communication Scale	3.484	<0.001	1.549
Quality of Life in Alzheimer's Disease Scale	5.258	<0.001	0.924

"Time Travel Diaries" demonstrates promising potential for gerontechnology in dementia care, delivering evidence-based outcomes with large effect sizes. This scalable, culturally sensitive platform offers the potential for HA implementation, addressing workforce challenges while maintaining therapeutic quality. The innovative "Time Capsule" methodology creates lasting family legacies, extending therapeutic benefits beyond clinical settings.