

Loving Baby

A Multi-modal Interactive Cognitive Ability and Language Enhancement System for Special Needs



Project Team

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Project Overview

Loving Baby is a human-like and multi-modal robot system that uses ASR, gestures, games, songs, animations, visual aids and touch interaction to support inclusive language learning, cognitive development, engagement and emotional wellbeing among primary students with SEN.



Features and Advantages

SDT-based learning design

Supports autonomy, competence and relatedness through structured robot interaction.

Multi-modal interaction

Integrates ASR/TTS, gestures, songs, animations, games and touch-based responses.

Scenario-based language tasks

Supports vocabulary, short-sentence and sentence-expansion learning in classroom contexts.

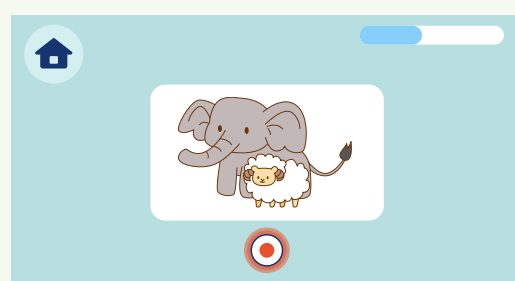
Inclusive education focus

Designed for diverse learners, including students with and without dyslexia.

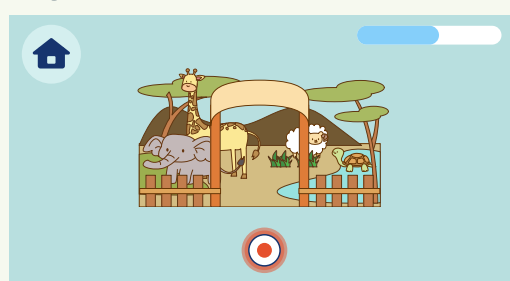
System Flow



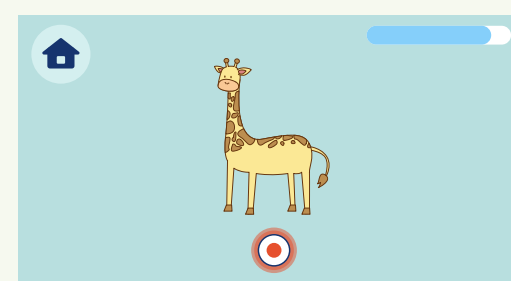
(a) Vocabulary



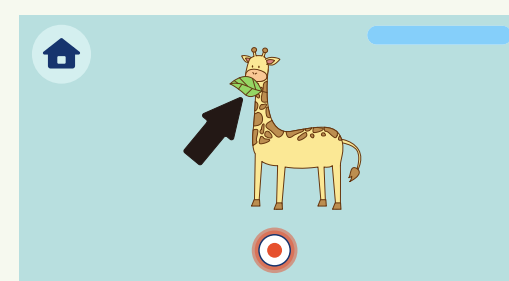
(b) Short-sentence



(c) Sentence expansion (where)



(d) Sentence expansion (who)



(e) Sentence expansion (what)

Evidence of Impact

20

HK primary schools

1

Singapore pre-school

5,000+

student headcount

5+1

papers published / accepted

Post-Test Mean Scores

Behavioural engagement

Emotional engagement

Cognitive engagement

Intrinsic motivation

Learning proficiency

Improvement

+13.24%

+13.14%

+21.56%

+12.07%

+9.88%

Engagement/motivation: max = 15; learning proficiency: post-test mean score, max = 1

Future Development

- Inclusive classrooms, SEN support and school-based language programmes
- Positive education activities and emotional wellbeing support
- Adaptation for different learner profiles and learning domains
- Further algorithm refinement and wider educational deployment

