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Design Execution



A tablet with Card Adventure app

- ✓ Learning incentive and effective of teaching
- ✓ Develop social skills and sense of teamwork by sharing tablets
- ✓ Simple gesture allows early development of kids through learning on tablet
- ⚠ For children under 6, restrict time of use less than half an hour



Sets of cards

Kid's cards



- How to use
- Radical
- Radical's graphic

Elderly's cards



- Weapon's graphic
- Weapon's name



A boss indicator

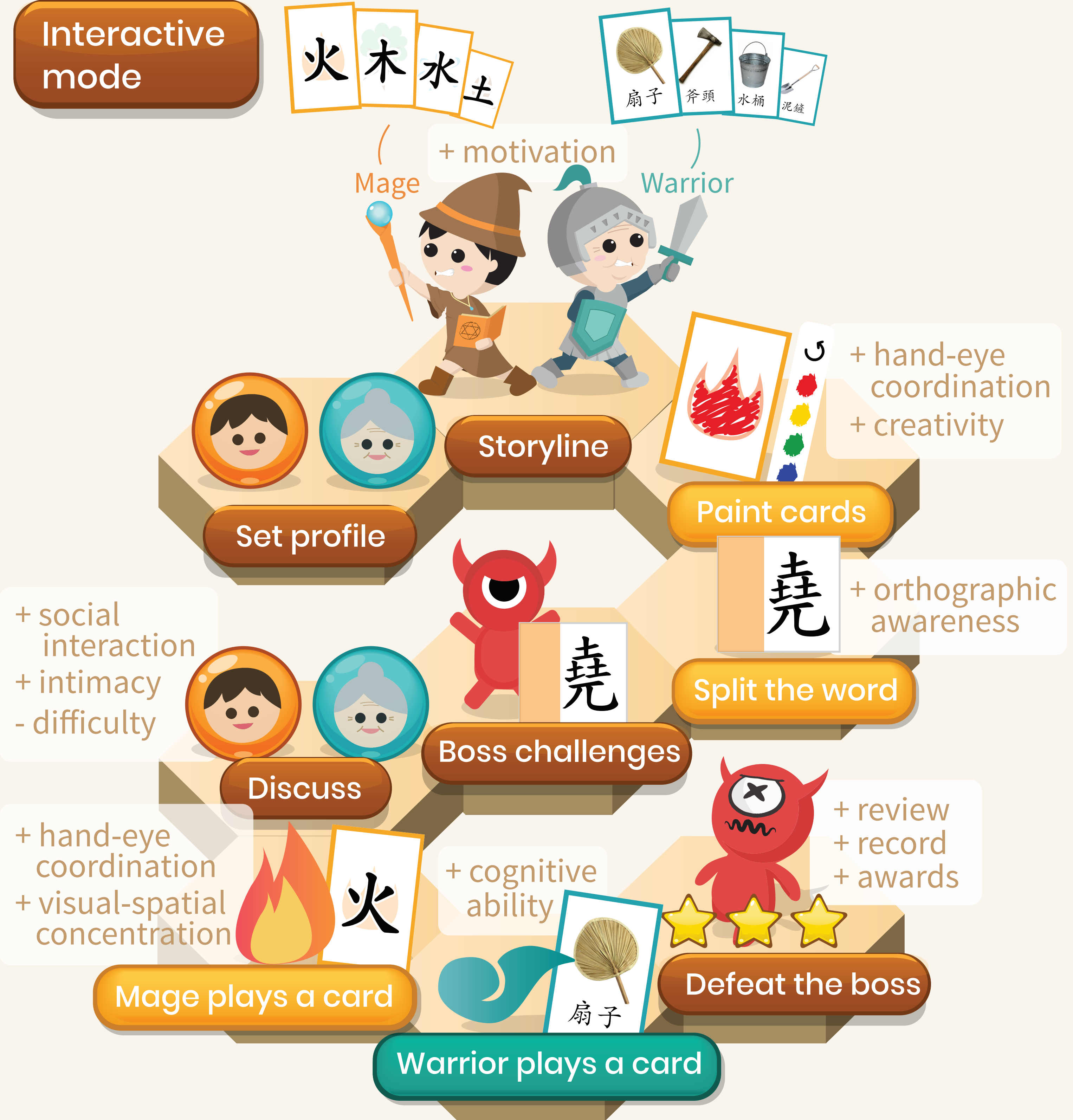
- ✓ Place it on the table
- ✓ Before the game, hold your tablet and aim it with the tablet's camera

User Journey

Self-learning mode



Interactive mode



Card Adventure

intergenerational version
learn with fun and love

awardee
of



PolyU Micro Fund 2018



HKXF FYP+ Supporting
Scheme 2018

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by



Dyslexia is the most common learning disability all over the world. We target the two major current obstacles faced by dyslexic children: defect of orthographic awareness and delay development of perceptual motor skills. On the other hand, we discovered that they are more talented in right-brain. Therefore, we would like to design a card x AR game in order to let them practise Chinese in a more favourable way while having fun.

✓ Design Qualities



Motivating

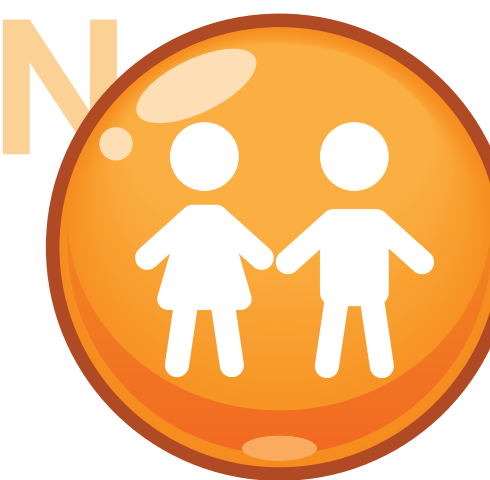


Playful



Intergenerational

Targets



Dyslexic kid
Age: 4-8



General elderly

? Problems



low language ability

poor results
communication
problem



low self-esteem



language learning



perceptual
motor training



social activities

Needs

Vision Statement

To create a **joyful** game learning experience for dyslexic children, and improve their **language ability, learning incentive and social-emotional health**.

Design Solution

An AR card game for dyslexic children to learn Chinese with elderlies.

Why general elderly?

Featured research



a preschool in a nursing home



According to a programme in Seattle, having a preschool inside a nursing home attain different advantages.

When preschool kids and elderlies learn together



improved learning atmosphere
and built harmony



children learnt how to be social
with elderlies



elderlies felt they were connected
with others

▶ General elderly is added as a secondary player.

Potential problems



Dementia

According to the World Health Organization, about 47 million people worldwide currently live with dementia and this number is expected to nearly triple by the year 2050.

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Facts

Dyslexia is the most common learning disability.

$\frac{1}{4}$ preschool kids have reading n writing problem

$\frac{1}{9}$ primary school kids suffer dyslexia

Problem

The reading system in the left hemisphere (especially left frontal operculum) has a multiple damage (Coltheart, 2000).

40% suffer defects of orthographic awareness 字

(Ho, Chan, Tsang, Lee & Luan, 2004)

Orthographic awareness includes character configuration and structure knowledge; orthographic processing refers using the visual system to form, store, and recall words.

Delayed develop-ment of fine motor and perceptual skills

(Tseng & Murray, 1994; Education Bureau of HKSAR, 2007)

Perceptual-motor development is a combination of sensory skills and motor skills that allow a person to synchronize body movements (Gray, 2018).



sleeve

sleep

/visual error

paint

painting

/morphological error

dyslexia

/dizziness



lage

/orientation

edt

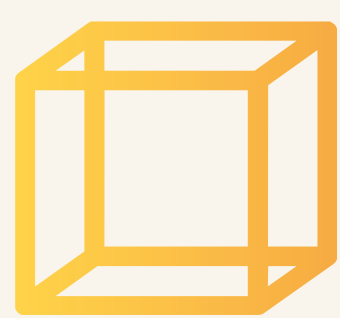
/mirror writing



/slow

Talents

Reading relies extensively on right-hemisphere orthographic and semantic processing. The reliance on right-hemisphere depends on the degree of damage to left frontal operculum (Coltheart, 2000).



Highly sensitive to 3D objects

A graphic designer discovered that dyslexic people faced difficulties in distinguish letters and other 2D objects, but they don't have any problems in distinguishing 3D objects. Thus, he designed 3D approach 2D letters (dyslexiefont.com, 2017).



Excellent visual-spatial thinking and memory

Dyslexic children have **better visual and audio memory of concrete words, visual-spatial memory, pictorial memory** compared to non-dyslexic children (Constantinidou & Baker, 2002; Mortimore, 2008; Tafti, Hameedy & Baghal, 2009).



Highly creative

Dyslexic children and teenagers from different schools in France, Belgium and Iran **score higher** than non-dyslexic ones in the **Torrance Test of Creative Thinking (TTCT)**. Thus, dyslexic children and teenagers tend to be highly creative (Mortimore, 2008; Tafti, Hameedy & Baghal, 2009; Kapoula et al., 2016).

Features



Radical and parts

Easier for dyslexic kids to learn one by one



Perceptual-motor training

Enhance hand-eye coordination, fine motor and visual-spatial concentration



Augmented reality

Enhance **motivation**

Stimulate **right brain** (3D, visual-spatial)



Multisensory

Enhance **memory efficiency** (Constantinidou & Evripidou, 2012)

Enhance **motivation**



Gamification

Enhance **brain volumes** and **cognitive ability**

(Alzheimers Research UK, 2014; Savanna House, 2017)

Enhance **perceptual motor skills**

(Savanna House, 2017)

Higher level of **enjoyment of relationships** and bonding and bridging social capital

(Anonymous, 2013)

Purposes



Social isolation and emotional issues

In Hong Kong, World Health Organization Report stated that 26.7% of Ilderlies aged over 70 commit suicide in 2012. And, depression and loneliness due to social isolation are major factors of elderly suicide (Ho, 2016).



Maintain brain function



Enhance social connection

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