Design and Development of Intelligent Learning Companion for Primary School Students based on the Tour of Well-known Scenic Spots in Beijing

Authors :
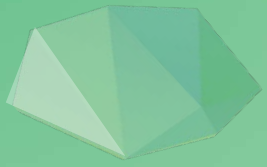**Wang, Yujun Ma, Haotian   Li, Chengyu**

Mentor :
Prof. Feng-Kuang Chiang

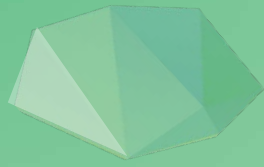**School of Educational Technology, Beijing Normal University**

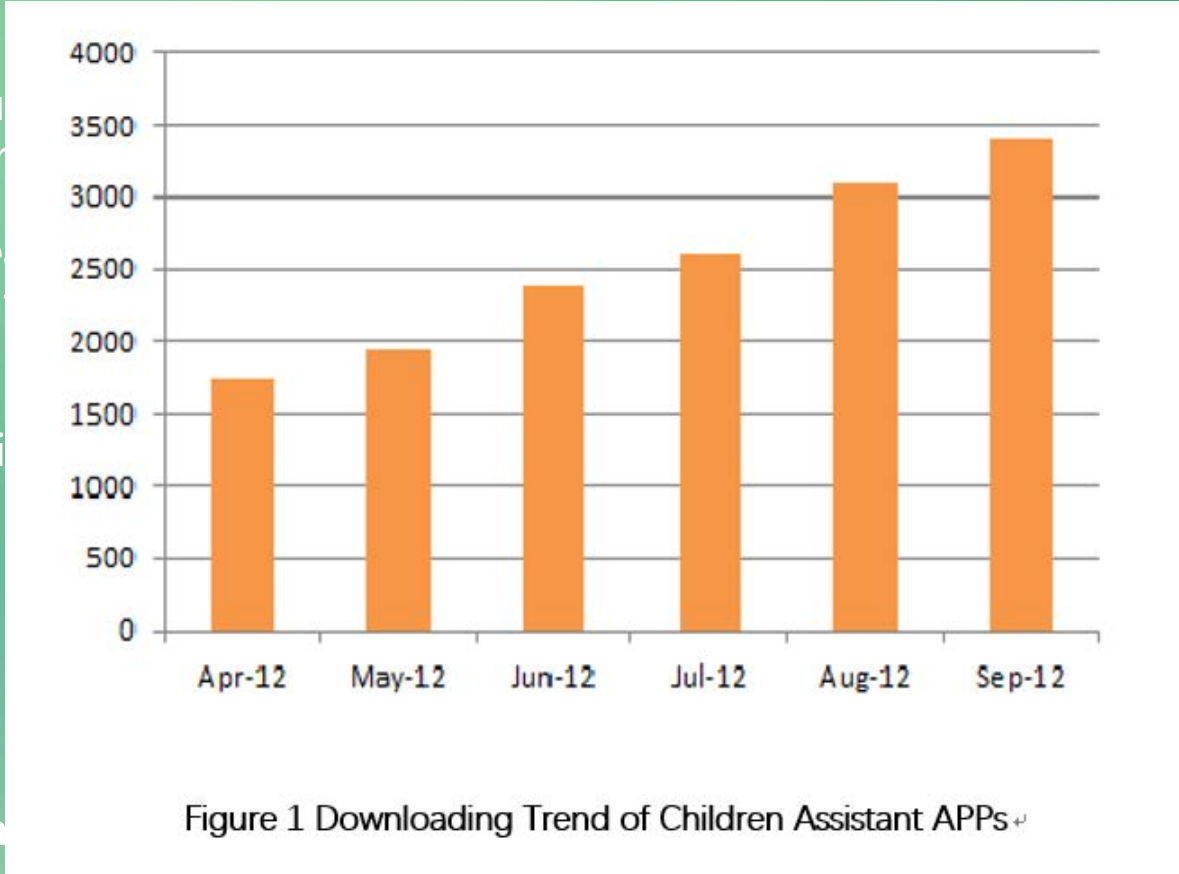北京师范大学
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Contents

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Background

- **STEM Edu...**
The world requir... ...onals.
...r, 1983; Sandia Report, 1993)

- **Mobile Le...**
Decreases limita... ...o be helpful.
...2015; Georgiev, T et al, 2004)

- **Formal &...**
Informal educati... ...ellectual domain.
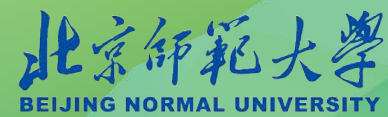...M., 1973; Y. A. Cohen, 1971)

Motivation :

- **Economic ...**

- **Implemen...**

- **Prevail of Smartphones & Rise of APPs**

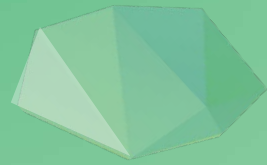- **Emergence And Development of Intelligent Learning Companion**

Figure 1 Downloading Trend of Children Assistant APPs

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1 Project Context

Needs Analysis :

Pilot Study： A Field Survey at The Forbidden City
Parents :
- Take children to travel and to visit educational scenic spots
- Teach children knowledge/principles while travelling

Primary school students :
- Have their own mobile terminals and are accustomed to use th
- Interested in an app helping them to learn while travelling

Learner Analysis :

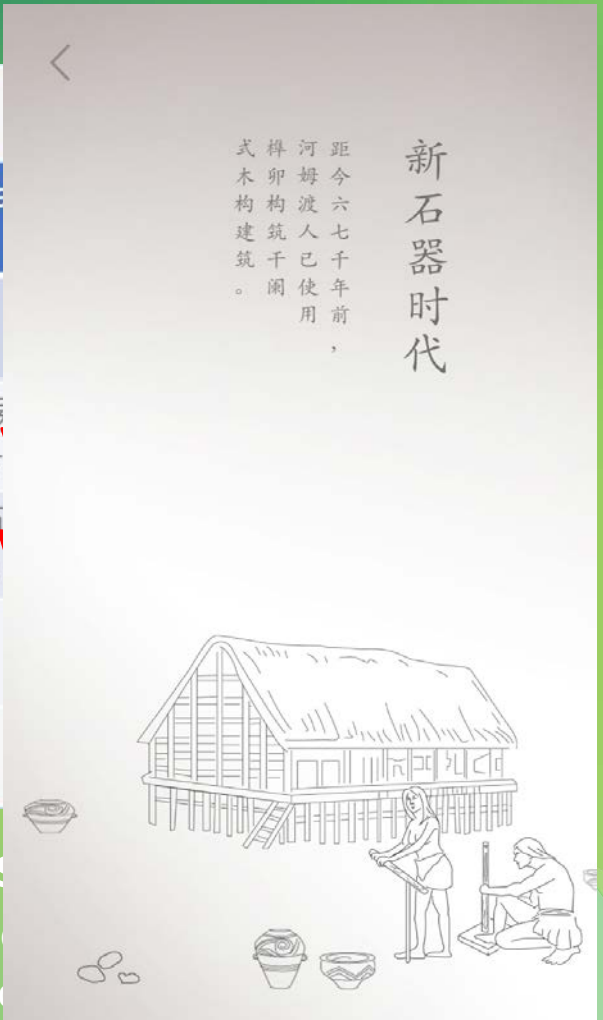Target users: primary school students, especially 3rd to 6th gra
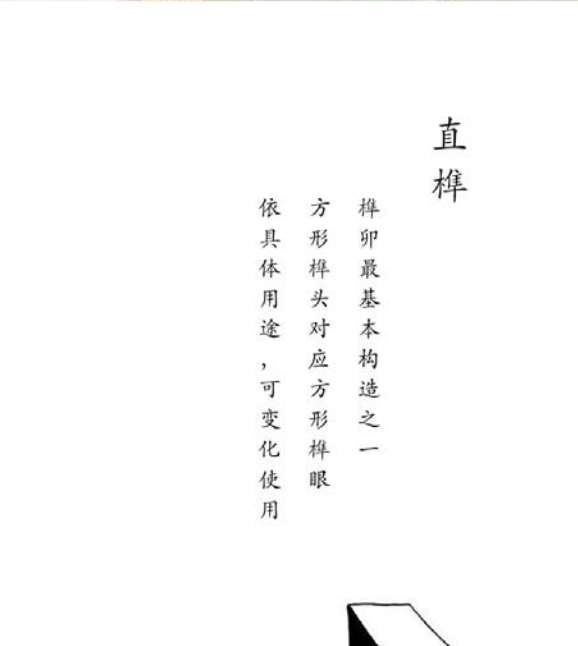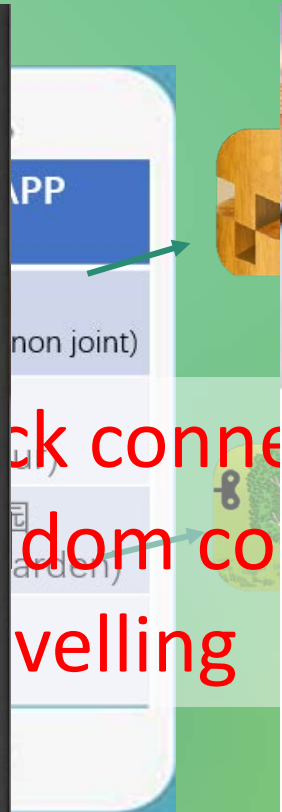
- **Physical - need specific things to support, practical skills th**
- **cognitive development theory)**
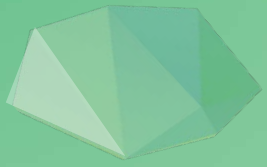- **Mental - lack a focus of attention, but process a high degree of interest**

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APP
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Shortages
- Lack sens...
- Lack pers...
- Include only 1 tourist spot

...ll-designed int...
...ural interface...
- Informative

新石器时代

距今六七千年前，河姆渡人已经使用榫卯构筑干阑式木构建筑。

新石器时代

直榫

榫卯最基本构造之一，方形榫头对应方形榫眼，依具体用途，可变化使用

结构 知识
工坊 关于

语言 声音 评分 分享

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3 Problem Posing

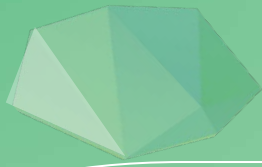## 1st. Design and Develop An Intelligent Learning Companion (APP)

- Primary school students

- Well-known Scenic Spots in Beijing
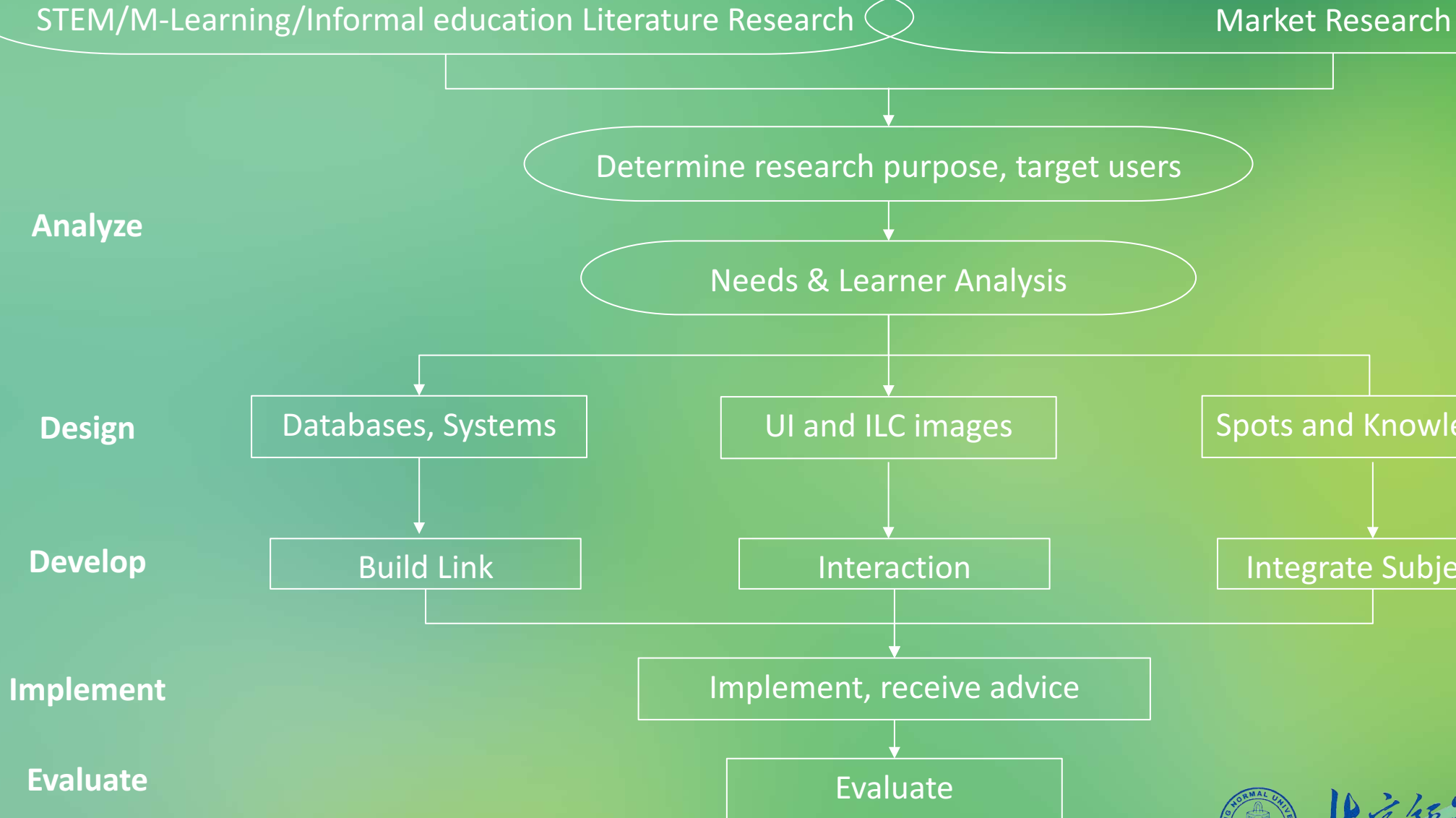
2nd. Implement and Evaluate
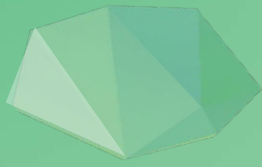
Innovation:

- 1. Fuse formal learning with informal learning
  (teach textbook knowledge while travelling)

- 2. Combine STEM education with travelling

- 3. Include more than only one tourist spot
  (3 theme routes and other spot options)

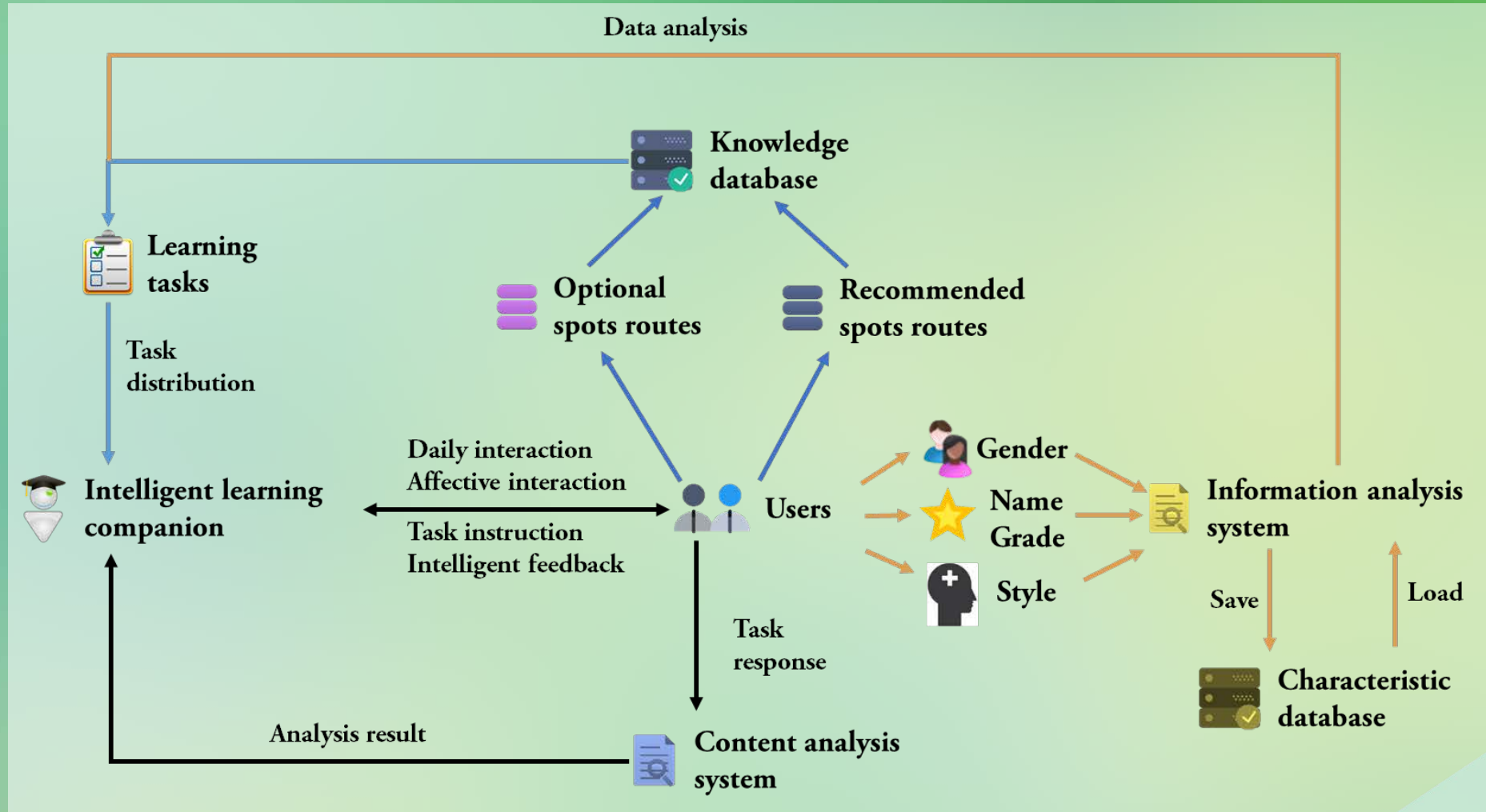- 4. Use intelligent learning companion to realize individuation
- 5. Task-Oriented Method

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3 Problem Posing

STEM/M-Learning/Informal education Literature Research

Market Research

Determine research purpose, target users

Analyze

Needs & Learner Analysis

Design

Databases, Systems

UI and ILC images

Spots and Knowledge

Develop

Build Link

Interaction

Integrate Subjects

Implement

Implement, receive advice

Evaluate

Evaluate

6

4 Project Design

4.1 Fundamental Design:
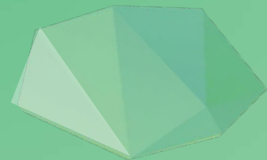
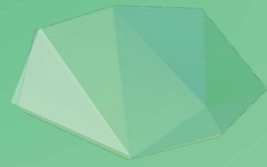# Part 4 Project Design

4.2 UI Design:
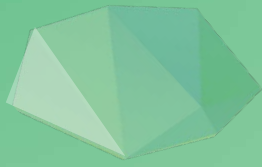
4 Project Design

4.3 Content Design:

Three Theme Routes:

Route Theme	Tourist Spot1	Tourist Spot2	Tourist Spot3	Tourist Spot4
Historic	The Great Wall	The Forbidden City	The old Summer Palace	Jingshan Park
Olympic	Bird nest (Beijing National Stadium)	Water Cube (National Aquatics Centre)	Beijing Olympic Forest Park	
Cultural	Guozijian (The Imperial College)	Confucian Temple	Mao Dun's former residence	Memorial hall of Guo Moruo

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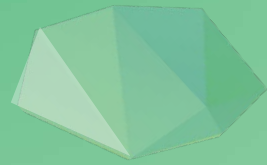
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4 Project Design

4.3 Content Design:

Take Historic Route for example:

| Historic route	Textbook knowledge related	Textbook version	Modes of instructional content presenting
The Forbidden City	1.CS：function of it 2.CK：specialization and stories of some parts 3.SK: ancient architecture	People's Education Press Chinese National Education (S ver.) Shandong Education ver.	text, graphic, audio, documentary and game
The Great Wall	1.CS：function of it 2.CK：history of it 3.SK：functions of some parts of the Great Wall	People's Education Press Chinese National Education (S ver.) Shandong Education ver.	text, graphic, audio and video introduction
The Old Summer Palace	1.CS：function of it 2.CK：history of it relevant Chinese modern history	People's Education Press Chinese National Education (S ver.)	text, graphic, audio, documentary, and game
Jingshan Park	1.CS：function of it related stories 2.CK：art of royal garden in ancient China		text, graphic, audio and TV series video

CS: common sense
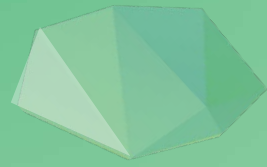CK: cultural knowledge
SK: Science Knowledge

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4 Project Design

Specific case of the Forbidden City
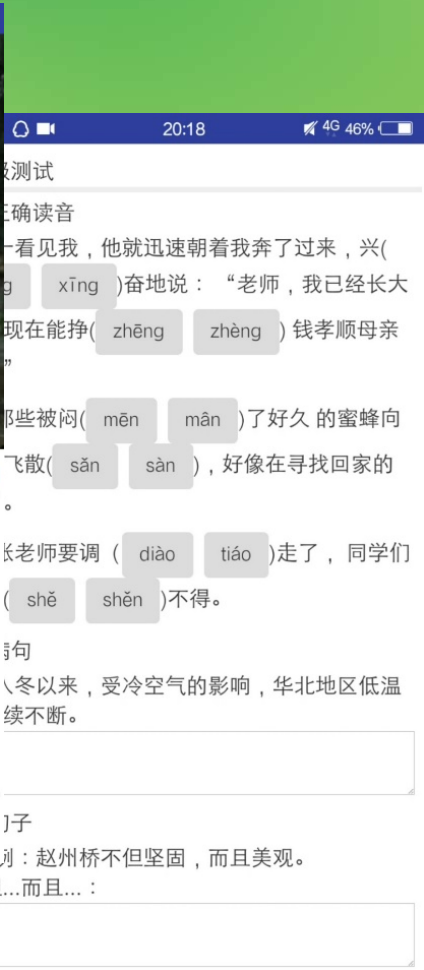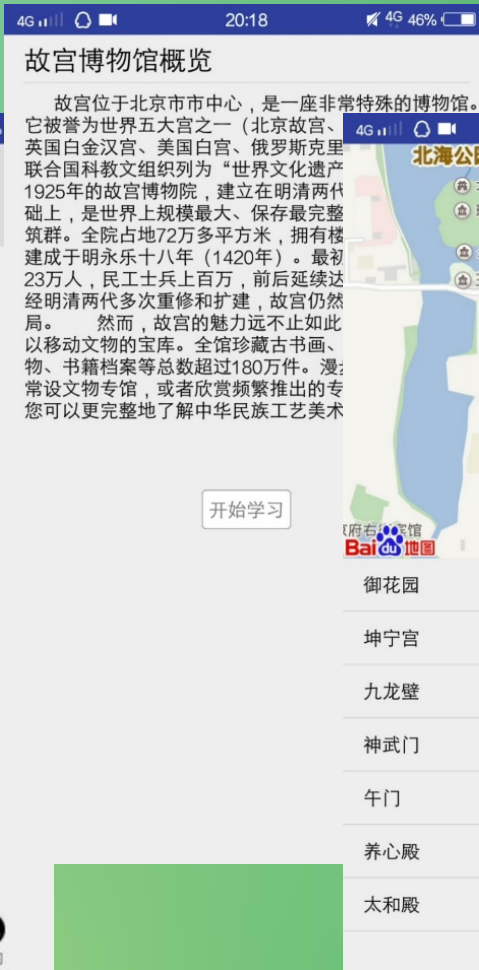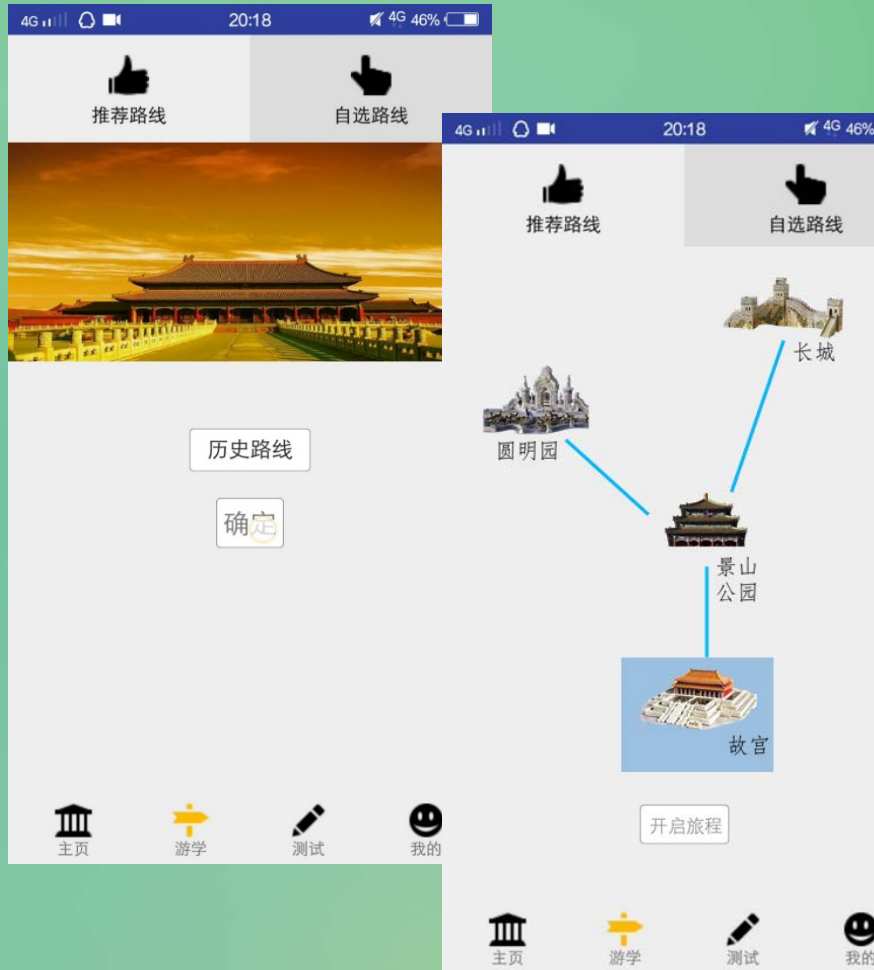
5 Future Work

- **Modify and perfect**

- **2nd Problem——Implement and Evaluate**

    Test our APP in a primary school of Beijing, let pupils use our intelligent learning companion (APP) while visiting the Forbidden City.

    (1) Behavior observation
    Video students' behaviors while using APP, analyze

    (2) Questionnaire survey
    Get their feelings and advice about using APP

    (3) Personal Interview
    Detailed and in-depth feelings

- **Maybe cooperate with travel agencies or government, and gain profits**

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Thank You!

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