

# Mobile Wikipedia: A Case Study of Information Service Design for Chinese Teenagers

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**Abstract.** This study applied User Centered Design in mobile service design. First, an interview was conducted to analyze needs of teenagers. Chinese teenagers desire more information about daily life and more interaction between users. Second, based on the results of the interview, a low fidelity prototype was developed. To evaluate the design, teenagers participated in the second interview and told its pros and cons. Finally, refinement was made and a high fidelity prototype was ready. This prototype combined both Wikipedia and the query-based interaction. Results of this study have reference value for practitioners to involve target users into development process of information service.

**Keywords:** Chinese teenagers, Wikipedia, mobile phone, information service, User Centered Design.

## 1 Introduction

China is the biggest mobile phone market in the world. The number of mobile phones users is more than 850 million [1]. Among them, 277 million use mobile net citizens. Mobile net citizens become the main driving force for the rising of general net citizen scale in China [2].

Teenagers contribute to a considerable part of mobile communication market. A large proportion of teenagers in Korea (80.6%) and Japan (77.3%) own mobile phones. In China, 48.9% of Chinese teenagers aged between 12 and 18 are mobile phone users [3]. There is a big market potential to attract the other half of teenagers.

Chinese teenagers are a user group with unique characteristics. Different from western teenagers, they obey parents and have heavy study burden. As a result, they have limited time and money to use mobile phones. This calls for modification of current design for better matching of their needs. To achieve this goal, this study applied User Centered Design to develop information service. Prototypes of Wikipedia named Wikiteen for mobile phone were developed and tested. It is an explorative study to apply methodologies of human factors to service industry, which is a relatively less studied area.

The design process of this study is of reference value to practitioners, and is one way to attract more teenagers. This is important because young people are generally early adopter of new technology, and their adoption, in turn, will contribute to the mass adoption. Service providers compete severely to attract young people especially during the spread of 3G technology.

## 2 Literature Review

Young people's usage of Wikipedia was studied in education context. Clark et al. (2009) studied young learners' usage of web 2.0 tools and activities in and out of school. They found young learners would like to use some Web 2.0-type technologies including Wikipedia to support learning in more formal contexts [4]. The impact of Wikipedia on classroom was also studied by Harouni (2009). He used Wikipedia to help high school students develop research skills [5].

Searching is frequently used in Wikipedia and therefore many researchers studied presentation and organization of searching results. Traditional list-based search results can be improved by using the form of tables, infoboxes, lists, and hierarchies [6], by clustering searcher results [7], or by supporting image search [8].

Another important activity is submitting articles. Sharing knowledge on Wikipedia is a behavior driven by many reasons. The most important one is the internal self-concept motivation. People judge whether knowledge sharing gives them a sense of personal achievement and whether it is consistent with personal standards [9]. Since many young people are reluctant to contribute to Wikipedia [10], a good incentive system may be needed.

A more related study is the interview of 15 young people aged from 13 to 24. The results indicated that young people use Wikipedia as a tool for a narrow range of tasks. Wikipedia was not deeply integrated into their everyday lives. To change this situation, much work such as information reliability needs to be done. And the most important work is to analyze the deeper needs of users to make Wikipedia fit into young people's lives [10].

## 3 Methodology

Teenagers were involved in the entire process of User Centered Design, from needs analysis to design to evaluation. Based on user needs identified in an interview, a low fidelity prototype was designed and tested. Then, it was refined to be a high fidelity prototype.

### 3.1 First Interview

The aim of the first interview was to gather teenagers' needs. Three teenagers aged between 16 and 18 participated in the interview. Two of them were high school students and the other one was freshman. Two of them were male. Participants were asked to talk about three topics: 1) Wikipedia, to know their knowledge, usage behavior, and interested information; 2) mobile phone, to know their usage frequency, Internet use, and monthly cost; 3) mobile Wikipedia, to know their desired information, incentive, and article length.

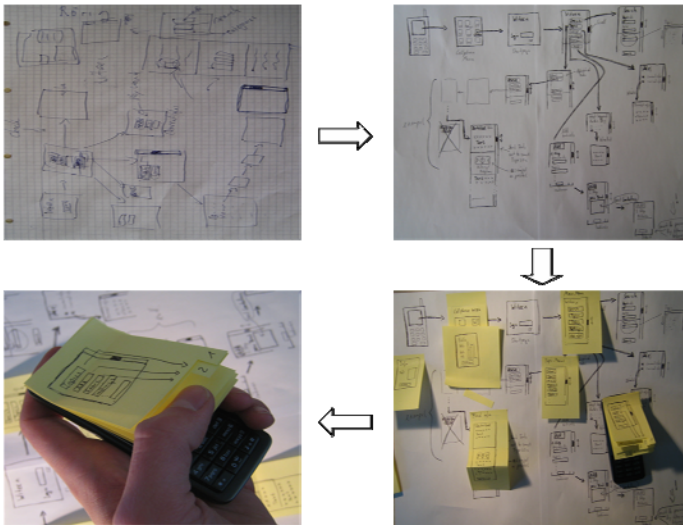
Participants perceived that Wikipedia was similar to Baidu Knows, which is the largest query-based community to share knowledge and experience in China. But Wikipedia was more about academia while Baidu Knows was more about daily life. They thought there was a professional team to check information created by users. However, they did not use Wikipedia often because they usually need information related to daily life rather than academia. They were interested in gossip, daily life in collage, current affairs, sports, and some professional knowledge.

Participants used mobile phones frequently. They often surfed on mobile Internet to know current affairs, weather, and updates of social network websites such as RenRen. They could ask for 50 to 100 RMB per month from parents to pay mobile phone bill.

Participants' desired information of mobile Wikipedia included both professional knowledge and entertainment information. They would like to look up definition of mathematical concepts and explanation of English words. Also, they would like to see news of famous person, current affairs, and some jokes. Incentive (e.g. a discount on their phone bill) was helpful for inspiring them to submit article, but they did not want to submit long articles due to the difficulty of text entry on mobile phone. Besides, they felt safer if all users are teenagers.

### 3.2 Low Fidelity Prototype

Based on results of the first interview, a low fidelity prototype was developed. Sketches were drawn to show overall structure and relationship between screens. They were refined as ideas become clearer. Then, post-it note stickers were stuck to sketches, representing a particular status of the application as the user navigates it. Finally, they were added to the mobile phone display. Multiple note stickers were labeled with numbers, shown in Figure 1.



**Fig. 1.** Low fidelity prototype development process

The structure of this system is shown in Figure 2. It consisted of four major functions: Search, Topics, Today, and Add. Teenagers can choose their interested information in Topics and know current affairs in Today. There was a special session named Add. Teenagers can submit articles and questions here. This could satisfy their needs to ask questions and get answers related to daily life.

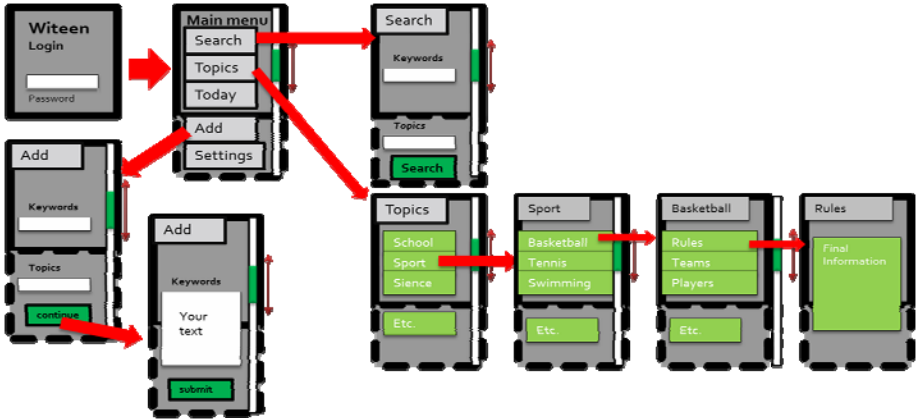


Fig. 2. Structure of low fidelity prototype



Fig. 3. Main page

### 3.3 Second Interview

To get feedback towards the low fidelity prototype, three teenagers from high school were interviewed. They aged between 15 and 16. Two of them were male. Their attitude towards the prototype and intention to submit articles were interviewed. Besides, they were asked to find out ways to ask questions in Wikiteen.

The results showed that they can easily understand the prototype. And they can quickly find the page which was used to add questions. However, they thought the interface should be more attractive and support different profile templates, so that they could change styles anytime. Besides, they were more willing to submit articles if there was an incentive mechanism.

### 3.4 High Fidelity Prototype

The high fidelity prototype used the same structure as the low fidelity prototype, but added attractive appearance and dynamic change between screens. The high fidelity prototype was implemented with the software Photoshop CS 3.0 and Balsamiq Mockups.



Fig. 4. Search, Topic, Today, and Add pages

As shown in Figure 3, the main page supported users to search keywords, to browse interested topics, to kill time by seeing what happened today, and to ask and answer questions. They can log in to access more personalized information. Different from low fidelity prototype, users were not required to log in at the start page.

Although this prototype was not equipped with full functional database, the information search can carry out on a few examples. As shown in Figure 4, in the Search page, users can search keywords and search under a list of topics and history record. In the Topic page, each topic had its own portal including both news and questions. In the Today page, users can edit news and communicate with other users. Add page was another channel to ask and answer questions. They can also search among lists of questions and answers.

## 4 Discussion

Comparing with the Wikipedia website and existing mobile Wikipedia applications, the prototype in this study took needs of Chinese teenagers into account. The development process and design outcomes reflect consideration of user needs. In the development process, teenagers were involved. Their needs and attitudes were important input for improvement. As to design outcome, the prototype featured combing Wikipedia with personalized information and query-based interaction.

One interesting finding from need analysis was that Chinese teenagers perceived that Wikipedia was similar to Baidu Knows, but the former one had more academic information and the latter one had more daily life information and more user interaction. Teenagers would like to look up daily life information besides academic information. They wanted strengths of both Wikipedia and Baidu Knows. Therefore, questions and answers were included in Topic, Today, and Add, so that interaction between users would be convenient.

The biggest limitation of this study is the small sample size. Results cannot apply to general population. Besides, there is a lack of quantitative measures to test people's satisfaction. Future study may measure satisfaction with the Likert's scale, and compare the difference in satisfaction between two versions of prototypes. Despite of these limitations, results of this study have reference value to show how to involve target users into design process, and help practitioners design more popular service through the iterative design-test-redesign-retest cycle.

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