

Designing Mobile Interaction Design for the Deaf: A Malaysian Context

Chui Yin Wong
Multimedia University
Interface Design Department
Faculty of Creative Multimedia
63100 Cyberjaya, Selangor, Malaysia.
+6-03-83125521
cywong@mmu.edu.my

Chee Weng Khong
Multimedia University
Interface Design Department
Faculty of Creative Multimedia
63100 Cyberjaya, Selangor, Malaysia.
+6-03-83125621
cwkhong@mmu.edu.my

ABSTRACT

Malaysia is a fast-paced developing nation with relatively low computer-Internet penetration, and high mobile network growth. With many such developing nations around in the world, it is inevitable that some social, communal and public support aspects may be left behind in the process of national and economic development. This paper looks at the development of *DHearT*, a mobile-based community project that provides both the hearing and the deaf communities to share knowledge, to foster relationships, to mingle, to chat and to get-together on the mobile network. *DHearT* is a mobile community design attempt to address the local digital divide and also to bridge the communal and communication gap between the deaf and hearing communities via the locally expanding mobile networks. In this paper, we will describe several interaction design techniques such as metaphor studies, icon design, menu design that applied at *DHearT*.

Categories and Subject Descriptors

H.5.2 [Information Interfaces and Presentation]: User Interfaces – User-centered design; Interaction styles; Screen design (e.g. text, graphics, color); Prototyping; H.4.3. [Communication Applications]: Bulletin Boards; Electronic mail; Information browsers.

General Terms

Design, Human Factors.

Keywords

Online communities, mobile communities, interface design, interaction design, deaf, hearing impaired and design process.

1. INTRODUCTION

We can presently find imitations of our physical and social

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interactions among communities in cyberspace. These online, virtual communities attempt to adopt our everyday physical “neighborhood” concepts and expressions within online space. As such, online communities emerged by having a group of people being “connected” online, and contributing social interactions virtually without any physical presence. The nature of communities is changing from being a social network of households to a social network of individuals. There are thousands of online communities and new support groups emerging daily, which caters to common interests and also specific-interest groups. These communities encourage learning through shared experiences, and enable participants to offer and receive emotional support in a climate of trust, equality and empathy [1].

The advent of mobile technologies is creating a digital paradigm shift, especially in the way we communicate. Having a mobile device, such as a mobile or cellular phone, has become a necessity for communication and a commodity for everyone while on the move. We, therefore, can find an increasing trend where online communities are beginning to appear on cellular networks, reaching out to the greater masses (e.g. mobile devices, mobile social networks) that are constantly on the move. This leaves a lot of room for potential research work among HCI communities. However, there are limited studies conducted on mobile communities for the handicapped and disabled users, particularly for the deaf community.

2. DEAF COMMUNITY IN MALAYSIA

Malaysia is a fast-paced developing nation with relatively low computer-Internet penetration, and high mobile network growth. With many such developing nations around in the world, it is inevitable that some social, communal and public support aspects may be left behind in the process of national and economic development.

For an estimated 24 million population in Malaysia, the adoption and use of mobile phones (72.3 per 100 inhabitants) has increased exponentially and surpassed the subscription of Internet dial-up (14 per 100 inhabitants), and fixed-line telephones (16.1 per 100 inhabitants) for the second Quarter of 2006 [2].

The population of the hearing impaired and deaf is estimated at 32,000 in Malaysia, and many rely on mobile networks to communicate with friends and families whilst on the move. It is highly desirable for the deaf community to have a localized and

alluring social channel on mobile networks that cater to their niche interest.

Interactions by the deaf society through such cellular and wireless networks may well be for the exchange of information, sharing special interests and hobbies, sharing experiences, live-streaming special moments, gossiping, providing medical advice, providing moral support, exchanging views, and also exchanging experiences in life. However, we can find the existing online communities that are catered for specific interest groups, such as those for the handicapped or disabled population, are mostly located in the United States and Europe. It is very rare to find online community sites that cater for the needs of a disabled community in the developing nation. As Malaysia is a developing nation, we are interested in developing and designing an online community for the deaf as an underserved population in the local context.

3. DESIGN AND DEVELOPMENT OF DHearT

3.1 Introduction

In this session, we describe the use of metaphor being applied on the overall interface design of DHearT, particularly on icon design and menu design for the deaf community.

3.2 Metaphor Studies

The use of metaphor has been widely used in the design discipline to inspire and to help explain concepts. In the interface design process model, we use and apply metaphor to associate the primary object (metaphor) into a new conceptual design. In this project, a ferret was chosen to represent the DHearT mobile community. Ferret is a sociable creature in its class and has characteristics of being playful. Due to its characteristics, ferret was chosen as a metaphor to represent the deaf community who naturally loves to interact with others. The deaf people are generally lovely, peaceful, sociable, and needs friendship like other hearing people as found from the characteristics of a ferret.

3.3 Icon Design

The metaphor of a ferret used in this project was implicitly transformed into a series of icons. This includes simplified icon designs representing functional attributes such as *profiles*, *deaf news*, *camera*, *bulletin board*, *blogs*, *message box*, *gallery photo*, *jobs*, *horoscopes*, *games*, *fun box*, *sign ABC*, *sign 123*, *quiz*, *my profile*, *news*, *sign builder*, *sign learning*, *basic sign*, *trash*, *upload*, *upload blog* and *upload photo*. A screen shot of some icon designs are shown below (figure 1):

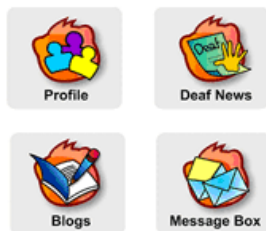


Figure 1: Some icon designs developed for DHearT mobile communities.

3.4 Menu Design

We designed a main menu with six categories to represent the main features of the community. This includes 'jobs', 'fun box', 'blog', 'news', 'sign language' and 'profile'. Each menu category was designed to have less than 5 levels of hierarchy down. We also designed an avatar to enable users learning animated sign languages in some menu designs. Below are some screen shots examples of menu design for DHearT (see figure 2 and 3):



Figure 2: Main menu.



Figure 3: Alphabet 'A' in sign language.

3.5 User Evaluation

We conducted user evaluations involving the deaf and also the hearing groups on DHearT prototype. The first phase of user evaluation was conducted on a PC based on a beta version of the DHearT prototype. We received feedback to improve on the overall interface design and conducted a second use trial on a mobile phone, especially on the navigation of the menu design in order to enhance user experience of users interacting with DHearT.

4. Conclusion

We designed and developed a mobile community to bridge the communication gap and foster relationships between the deaf and the hearing groups via DHearT. In doing so, we hope to reduce the digital divide and create a channel for the deaf community in Malaysia in terms of improving their standard of daily living. In addition, we are currently preparing to deploy DHearT with network server support and within a short-ranged, closed mobile network. This is to facilitate further user-device experiments and testing.

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6. REFERENCES

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