

Interaction Design for Mobile Communities: A Malaysian Context

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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 a case study on mobile interaction design for the deaf community in Malaysia, namely *DHeart*. The aim of this project is to share knowledge, to foster relationships, to mingle, to chat and to get-together on the mobile social network. *DHeart* is a mobile community design attempts 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 also describe the form of partnership and challenges between a design institution, telecommunication company and NGOs.

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

Interaction design, interface design, deaf, mobile communities, social network, design process.

1. INTRODUCTION

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We can presently find imitations of our physical and social 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 28 million population in Malaysia, the adoption and use of mobile phones (96.8 per 100 inhabitants) has increased exponentially and surpassed the subscription of broadband (21.1 per 100 inhabitants), and fixed-line telephones (44.9 per 100 inhabitants) for the fourth Quarter of 2008 [2].

The population of the hearing impaired and deaf is estimated at 35,000 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 elements of interface design (icons and menu) and user participation of *DHearT*, for the deaf community.

3.2 Icon Design

A series of icon designs were developed based on the metaphor transformation of a ferret in this project to symbolize cheerfulness and playfulness of its character. 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):

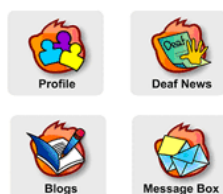


Figure 1: Some icon designs developed for *DHearT* mobile communities.

3.3 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.

3.4 User Participation for Evaluation

We conducted user evaluations involving the deaf communities 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. Academy-Industry-NGO Partnership

This *DHearT* project was one of the design projects for the theme of 'digital communities' under the collaborations of a Design Research Institution (Interface Design Department), Telco company (Telenor Research and Innovation Centre for Asia Pacific), and NGO (YMCA-Deaf). Both user community involvement and the role of user (deaf)-designer play crucial roles in making the project successful in meeting the needs of the targeted community. The challenges we faced were the focus of commercial interests of telco in terms of subscribers that represent local underserved population; inadequate language abilities and educational background for the community.

5. 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.

6. ACKNOWLEDGMENTS

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7. REFERENCES

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