

A study of a mobile collaborative learning system for Chinese language learning

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Abstract: In this paper, we introduce the idea of promoting language learning outside the classroom through mobile devices. We present Student Partner, an m-learning system designed specifically to promote collaboration among Chinese language learners, with capabilities including GPS, camera, messaging and recording. Some directions for future work are presented, and strengths and drawbacks of the mobile learning collaborative system are discussed.

Keywords: mobile learning, MCSCL, mobile discussion forums, Chinese language learning, mobile devices, GPS, location aware services

Introduction

In the mid 1990s, it was prophesied that we are transitioning to an age in which digital devices lead to a convergence of work and leisure, one in which learners become less book oriented and more responsible for their own growth [6]. It is our goal as mobile learning researchers to harness the functionality and mobility of small yet powerful computing devices to guide language learners towards maximizing their use of authentic input.

1. Context of mobile learning: Research and social practices

Students who wish to learn a new language often decide to travel to a place where it is used in daily life. They come with the assumption they will benefit from participating in real activities that occur in the context of the environment providing a way for learners to construct a new understanding of the language. There is an increased interest around the globe in learning the Chinese language. Many students decide to travel to Chinese countries to increase their competence in Chinese. They have access to excellent teachers who provide opportunities for language learning. However, a teacher cannot be with the students for more than a few hours of the day, and once the students leave the classroom, they lose access to their teachers. Language learners may have the great advantage of learning a language in a country in which it is spoken; however, it is our assumption that many do not maximize the affordances of the environment.

The basic assumption of language teaching is that communicative competence can be taught. However, communicative competence requires learning to think in a new way, learning to exist in a new language system. A key to applying language technology is realizing the necessity of a communicative use of language [8]. By concentrating on the real world of language use, we seek to motivate students to create and achieve goals in situations external to the classroom. Providing learners with mobile devices, also known as smartphones, that enable creation and sharing of content changes the scope of the Chinese learning environment. Upon expansion of the learning context, the nature of the activities evolves, the methods and tools change, as well as the reasons for interacting with the educational content [4]. Unless learning activities are sufficiently well designed, the goal of the researchers—to stimulate reflection-on-action—could very well not be achieved.

It has been demonstrated that dialogues can be tailored to specific situations, allowing a learner to engage in certain activities that they would otherwise be unable to do. Ogata and Yano [7] used mobile devices to teach the awareness of the formal language required when speaking Japanese. Investigators have found indications that if vocabulary is learned in goal-directed actions, it will be recalled better than vocabulary that is taught as part of a lesson [3]. On the premise that recall can be improved, we combine activity theory and our system to apply it to campus life in the research. We aim to make daily life the content that learners and teachers may share. That is, a Chinese learner can use the system, which is installed on the mobile device, to learn and record.

In accordance with the concept that systems evolve, we present a current snapshot of a mobile learning system, with the recognition that it will be further adapted and refined in partnership with students and teachers who use it, the parties who can make it a valuable learning tool. The next section will outline the use and functionality of Student Partner, a mobile platform equipped with GPS that is designed for use by a Chinese language learner. A discussion and conclusion appear in the final section.

2. Student Partner System

2.1 General

The design of the Student Partner system relies on a push mechanism for transfer of messages that allows updating and off-line reading. The main function that it allows is collaboration among multiple users to discuss without the restrictions of time and place. After adding messages, the device connects with a server to synchronize the database.

The first version of Student Partner [8] was designed for use as a mobile collaborative forum. The current version of Student Partner is an evolution of that project, designed specifically for language learning in a Chinese-speaking area. Several new functions have been added, such as GPS functionality combined with a campus map, which allows users to know where they are, and additionally to locate information near a location by interacting with the map. In daily life, the system can support common phrases as sound recordings, which learners can use for practice. Learners can also take pictures and record conversations with other people, and they may additionally take notes.

For example, in daily life, a learner tries to understand the menu at a local breakfast shop in the morning. He may decide to record his conversation with the clerk. When he goes

to the library then he interacts with the librarian in the process of borrowing a book. After this, he buys a coffee at a coffee shop. Finally he arrives at his classroom, and when his teacher asks about the daily life, he presents the recording he made at the breakfast shop for the class to hear and discuss. In the afternoon, he wants to go to Chungli City, so he asks a stranger where to take the bus. He practices a useful phrase found in the Student Partner phrase guide when he asks the driver how much money it costs to get on the bus.

Throughout the day, the notes that the student takes are categorized and correlated with the time and the maps. After a day of busy activity, the learner can use the system to recall the events of the day, which can strengthen long-term memory for learning Chinese. Data stored on a centralized server can be retrieved anytime, anywhere. Learners can read other learners' notes, and improve their Chinese in knowledge building exercises.

2.2 System overview

The main system of Student Partner is divided into four frames (See Figure 1). The top left frame holds categories for accessing learning content: Eating, living, transportation, questions and phrases. Once a general category has been selected, subcategories appear in the right frame; content appears in the central frame. A learner can select from text or icons in combination with GPS maps, and read associated messages. These messages can allow responses, strengthening the ability of the learners to collaborate in their learning. Below the main window, a time line records the daily sequence of interactions with Student Partner—when consulted it should allow a learner to strengthen long-term memory.

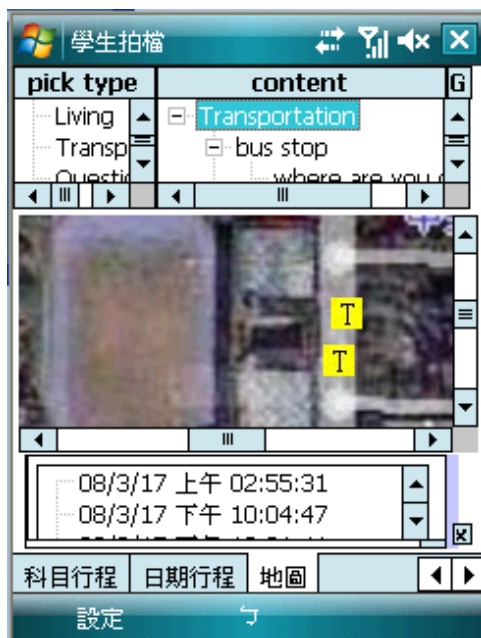


Fig.1 User main window



Fig. 2. A picture may be added as a file when making a new message.

Learners can consult photographs to situate the learning content. Figure 2 shows a picture that was taken in the local area of National Central University, a popular location for

students that is referred to as a little night market street. In addition to photographs, learners can also use the recording capabilities of the mobile device. Multimedia content as well as location information may be attached as a file to messages that may be shared with other learners (as shown in Figure 3).

Data can be attached to each message as follows:

- *Text*: Includes metadata, descriptions, related to the language
- *Location*: Automatic according to GPS or manually placed on a map
- *Photos, Video and Audio*: Students collect multimedia streams and share them. They may wish to capture real-world settings, or their own reflections on them.
- *Map*: Various types of maps, including school map and satellite map.
- *Chronology*: The time selection function links the record of one day in a sequence. Learners can review to strengthen their long term memory
- *Activity*: Learners may access data according to type of activity

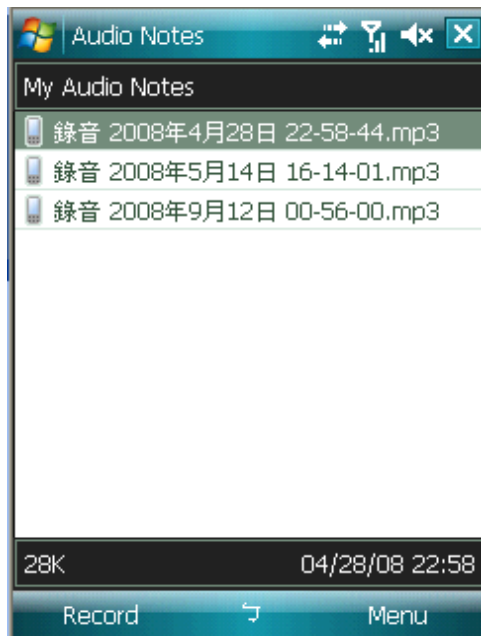


Fig. 3 Files made when recording can be added when making a new message.

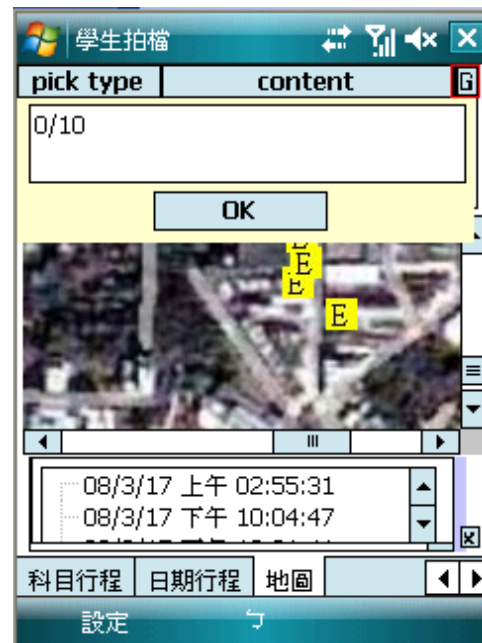


Fig. 4. Control of the GPS functions.

The Student Partner system offers an added capability of GPS positioning. This makes it faster for a learner who is unfamiliar with a particular location to locate on the map the content they created. Tags for content appear on the map as shown in Figure 4.

2.3 Summary

In summary, as the mobile device can connect with GPS, it allows learners to annotate maps of the area with audio, video, text and photos that they create. Learners can share their experiences with one another. A teacher can assign homework that includes information gathering. The wireless capabilities of the mobile device on which Student Partner runs

allows information to be transmitted to a server and to other users. This allows learners to collaborate with other learners and to interact with teachers outside class hours.

As the availability of teachers could be limited, assistants can be selected. A phone call, text message, or entry on a forum could alert others that there was a request for more information. The learners could collect data that represented things in the world that they were not sure about. They could then send this information to others for discussion and clarification. This information could be in the form of photos, video, sound clips, or text, and it could be geocoded with data from the GPS. Furthermore collaborative functions will be further developed.

3. Discussion and conclusion

The basic goal of Student Partner is to lead students towards functional use of a new language. It has been shown experimentally that a symbolic tool like Student Partner undergoes three developmental stages [1]. In the initial phase, learners perform at the same level that they can without the tool. In the intermediate phase, performance with the tool is superior to unaided performance. In the final stage, performance is the same with or without the tool because the tool-mediated activity had been internalized. We hope that students using the mapping function on Student Partner will eventually be able to locate a location-based assigned lesson without the aid of a GPS tool. And for language learning, we hope the learners would eventually be able to perform equally well with the language learning system as without it.

Nardi and O'Day [5] suggest that to work towards an evolution of information ecologies, we should focus on the core concepts. Working with the people involved, we can discuss strategic questions that determine relevant issues and describe the issue in terms that the users can relate to. Implementing this kind of technology is a complex task, but we hope it can effect change in the survival Chinese of language learners at NCU. Students may gain valuable insights into Chinese that promote communication. Materials developed consistently according to standards would also hopefully make it possible to transfer the learning materials to other contexts. Videos created by a content designer or by the student, can be transferred to other places, even perhaps to an NCU server or to YouTube. In doing so, the closed world of education could be opened up, opening up thinking about how to learn more effectively from situations.

Given the right environment, language learning occurs not only at certain times from a teacher and a textbook, but anytime. We seek to use the lens of activity theory, to examine how learning in daily life can strengthen the language competence acquired in class. The recordings from campus life become transformed into a type of reusable repository for learning Chinese. In the initial stage of research, we gathered suggestions about the system. A foreign student's assessment showed clearly some of the weaknesses and strengths of the current version of the mobile device and the Student Partner system. He considered the window of the map to be too small, and that the functions were too complex to use with ease; on the other hand, that the mobile device could enable content delivery at the right time. It has the potential to inform educators and researchers by providing feedback about how activities develop. We aim to improve on our original concepts and build on these issues for the future.

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