Do You Know My Name? Learning Mandarin through Game-based Learning

Hong Yi KHAW
Faculty of Computer Science and Information Technology
Universiti Malaysia Sarawak
Kota Samarahan, Malaysia
66376@siswa.unimas.my

Phei-Chin LIM*
Faculty of Computer Science and Information Technology
Universiti Malaysia Sarawak
Kota Samarahan, Malaysia
pclim@unimas.my

Suriati Khartini JALI
Faculty of Computer Science and Information Technology
Universiti Malaysia Sarawak
Kota Samarahan, Malaysia
jskhartini@unimas.my

Abstract— **Mandarin is difficult for a couple of reasons, such as the complexity of writing system, Chinese characters, and tone. It can be excruciatingly hard to learn Mandarin without motivation and immediate positive feedback. With the growth of technology, games now play an essential role in language learning. Games enable learners to actively participate in activities, and to strengthen their affective reactions such as interest and motivation. There are various language learning games available on the market but most of them are using similar ways such as flashcards which is very repetitive. A first-person view gameplay will be developed in this project to explore the possibility of immersive game-based learning and to provide an entertaining learning environment that motivates learners. The knowledge of vocabulary words for three topics which are numbers, colours, and direction are covered. Players are recruited to participate in our experiments. A paired sample t-test, $t(14) = 27.4$, $p < .001$ showed that there is improvement in the Mandarin learning achievement of players before and after playing the game. The average mean value of 4.55 is achieved using the RIMMS survey showed promising result in perceived motivation of the tested gameplay.**

Keywords—Achievement, first-person game, game-based learning, Mandarin, motivation

I. INTRODUCTION

Language is defined as "the system of communication in speech and writing that is used by people of a particular country or area" [1]. According to Anderson, there are 6,809 languages spoken today [2]. But while only 23 languages are spoken by more than half of the world's population. If both native and non-native speakers are counted, Chinese is the second largest language in the world. Over 200 dialects exist in Chinese and Mandarin is one of those [3]. Mandarin is well-known as one of the most difficult languages to learn. A list with four categories that shows the estimated time required to learn a specific language as an English speaker is made by the Foreign Service Institute at the US Department of State. Mandarin falls into Category IV which the difficulty level is the highest while required approximately 2200 class hours to reach proficiency [4]. Mandarin is difficult for a couple of reasons. According to Lyons, Mandarin's writing system is tremendously hard for English speakers since they are used to the Latin alphabet [5]. There are about 50,000 Chinese characters in total, however, they only have to recognize about 3,500 simplified characters to be considered literate since most of the Chinese characters are seldom used in everyday discourse [6]. Tone is another major challenge for non-tonal languages speakers when learning and there are five tones including neutral tone in Mandarin [6]. A different tone can have a different meaning. For example, "ma" can mean "mother," "rough," "horse" or "scold" depend on the tone [5].

With the growth of technology, games now play an essential role in language learning. Games enable learners to actively participate in activities, and to strengthen their affective reactions such as interest, motivation, and willingness to participate. By taking this advantage, games can also be utilized not only for amusement, but also for educational purposes such as language learning. In [7], the researchers found that those who learned through digital games had more effective writings and more proficiency in using words than those learned using traditional methods [7]. Furthermore, it is found that when compared to traditional teaching methods, learning using digital games has positive effects on the learning process and better motivation [8]. The study also found that engaging children in such games make learning more interesting and reduces the stress that associated with learning.

It can be excruciatingly hard to learn Mandarin without motivation. There are a lot of language learning games available on the market currently. For instance, "Game Learn Chinese" is a platform with user-friendly tools for learning Chinese language [9]. It has two modes which are character mode (learn words in Chinese characters) and pinyin mode (learn words using Latin alphabet). Besides that, an app that available on the App Store, "Learn Mandarin Chinese 5,000 Words - FlashCards & Games" provides flashcards for learning Mandarin vocabulary and use Spaced Repetition System to assure the Chinese words are memorised efficiently [10]. However, most of the language learning games are using similar ways such as flashcards which is very repetitive. Hence, a language learning game with different gaming mechanisms will be developed in this project which provides an entertaining learning environment that motivates learners. The game developed are limited to vocabulary words for three topics which are numbers, colours, and direction.

II. RELATED WORK

Game-based learning combines cognitive, affective, motivational, and sociocultural elements facilitated by design features that lead to an enjoyable experience [11]. Study in [12] found that games can greatly help players in learning specific subjects while players felt acquiring more information when the subject integrated into the game as they think that they were just playing a game instead of learning.