An Ethnographic Study of Mobile Videogames for English Vocabulary Development In Urban China

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ABSTRACT: *This study investigates the effectiveness of mobile video games for learning English language vocabulary among Chinese students in comparison with more standard electronic dictionary learning. This involved an ethnographic study of students in their natural learning environment which was followed by classroom testing of vocabulary proficiency. Results show that educational video games can both improve the student learning experience and student results when combined with traditional methods.*

1. Introduction

The start of this 21st century has been marked by a rapid rise in the use of mobile computing devices such as smartphones, tablets and notebook computers. To date there are over 2.23 billion mobile phone users and over 1.75 billion smart phone users worldwide, meaning that a remarkable 31% of the global population own a mobile phone and around 25% have a smartphone [1]. Adoption rates are even higher in China where smartphones are ubiquitous and in near constant use among young people and the student population in particular [2]. This popularity is boosted by the proliferation of cheap smartphone technology from prominent domestic providers such as Huawei, Lenovo and Xiaomi [3]. While there are social problems linked the over use of smartphones and users' inability to adopt sensible usage patterns [4, 5], the one certainty of smartphone technology is that usage is unlikely to go down anytime in the near future. Hence, the objective of this research has been to investigate the application of
smartphone technology to an activity that might be more beneficial to the user. That is, English vocabulary learning.

English can now be safely considered as the language of the world [6]. Through the advancement of British, and later American, commerce, trade and general cultural diffusion through books, films and popular music, the English language is now the global language of finance, education, economics and virtually every other field of significance. The problem is that while English may be easy to learn for European peoples coming from a similar background of a similar Germanic or Romance language, it can be extremely difficult for non-Europeans to learn. This includes many Chinese students who have to learn English from an early age, often without any real form of immersion or exposure to native speakers. This paper looks at the possibility of supporting

more intensive patterns of language learning through the use of mobile games.

2. Related Work

There are many researchers who recognize the value of educational games.These are also known as *serious* games and tend to have the objective of helping students achieve a specific learning goal such as learning how to perform specific mathematical operations or memorizing specific elements of vocabulary. A serious game is a computer application, which combines serious aspect of education, of learning or communication with the ludic aspects of a video game. In other words a serious game is a result of an educational scenario run into a video game [7].

But educational games are more than just games we can learn from, and mixing together playfulness and technology in serious games is more than simple entertainment. The serious game is a learning tool with multiple learning objectives, which focuses on groups of people with different ages and different levels. They can be applied in areas such as education, health, scientific exploration, engineering and many other domains. Applications of serious games in education are also called Edutainment. This kind of application enriches the game environment by adding a pedagogical technique to deliver educational content.

These applications present knowledge with an enjoyable process making the learning experience less stressful than it would be with traditional educational methods. In learning environments games are naturally motivating. The key features for a learning game are challenge, curiosity, control and imagination or fantasy [8]. Games need to be challenging with clear and fixed goals relevant for learners. They must also rouse sensory and cognitive curiosity.

Challenge and curiosity are generated by the uncertainty of a game. The unpredictability of the results maintains and activates the desire to continue the activity. The feeling in control of the player is the control of its learning experience, which guide its progress to its expected goal using a received feedback. Imagination and fantasy relate to emotions and thinking process of the learner. These element place the player in a fictional situation in which they can find relevant metaphors or analogies.

Another important element for the wellbeing of the learner is that the game reduces the anxiety associated with the learning process and the student can learn without being aware that they are *having to learn*[9].

Nowadays, video gamesare viewed by experts as one of the most significant forms of media for the enculturation of young people[10]. This is despite the link claimed by some authors between video game usage and violence or antisocial behavior [11, 12].

Indeed we should perhaps re-appraise the often cited evaluation of videogames as mindless or senseless playspaces in light of some recent developments in videogame culture. Studies have highlighted the richness of the discourse, the quality and depth of the collaborative inquiries, and the strategies developed by players in support of complex processes of learning, thinking and social practices that take place during gameplay[13].

There are even some examples of these kinds of games with an educational intent that implicitly exclude violent conduct. We have, for example, Quest Atlantis Project [13]a game without guns. This is a 3D multiuser virtual environment designed to offer an immersive experience to children from 9 to 15 where players can travel into virtual places to perform educational activities like attending a botanist training or building houses.

Another good example of an educational game is PlayPhysics, an emotional game-based learning environment for teaching physics to students of undergraduate level, developed at Trinity College Dublin. In the game the student is an astronaut. He has as mission save his or her mentor who has been trapped on a space station. PlayPhysics allows players to learn, explore, and understand concepts such as Newton's law for particles and rigid bodies. The game provides suitable guidance according to the detected user's emotional state [14].

The game developed for this study is specifically designed for university age students and mobile play on smartphone devices for the learning of English language vocabulary for Chinese students.

Figure 1. Student Interviews

3. Methodology

Our experiment involved six students, three boys and three girls between the ages of twenty and twenty-two, all studying for their English IETLS exam with a set vocabulary to learn and memorize. Two students used the learning game, two used a dictionary and two students had only classroom support material. The students were all given a short test at the same time before using the game software or dictionary and another test just before their exam to test the proficiency of each method. Each test was scored out of 50 for the memorization of 50 words. Students were also interviewed to gauge their attitude toward each method.

Figures 1 and 2 show screenshots from our videogames. The design is similar a language game designed to help Mexican primary children to learn the names of animals in English [15, 16]. Here students need to match Chinese and English words to fire fireballs at zombies slowly approaching from the right hand side of the screen. If the zombies reach the left hand side of the screen they drain the user's energy and they eventually die and the game is over. The game begins with a small number of more common words and as the game advances the difficulty level increases with a wider variety of gradually more obscure words. If the students are not already familiar with the words, they can normally find the translations out by trial and error and learn from their mistakes. The game also includes a high score table to introduce more incentive for the students to play the game again and try to improve on their previous performance.

4. Results

All of the students showed an improvement in the second test. This is unsurprising since the students would also use books and notepads to revise for their exam. The students using the videogame improved by 45% while the students with the dictionary improved by 34% and the students without support improved by 16%. These results are not statistically significant due to the small sample number but they are encouraging, especially given that the videogame group started with a higher average mark (around 32) than the dictionary group (27) so had less space to improve.

The results of our structured interviews are somewhat more interesting. Student attitudes were positive toward the videogames, neutral toward the dictionary and negative toward having no electronic support. All of the students felt the electronic videogames would be useful for learning vocabulary. They considered the software convenient and fun, although one student thought it might reduce his focus on other aspects of study. The majority of the students considered that the method using education videogame software would be more effective that other techniques. This included the two students who used the game.

Figure 2. Screenshots of our simplemobile educational videogame; left high-score screen and right the gameplay

5. Conclusion

The results of our study show the potential of mobile educational videogames to improve the learning experience of university age students and particularly Chinese university students learning English vocabulary. We believe that while these are early results, they are significant due to the importance of English learning for the future job prospects of Chinese students and the potential to make use of the now ubiquitous smartphone technology. We also believe that these results add to the body of research that indicates that videogames have the potential to have a more positive effect on our lives and the society we live in.

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