

The Research on Chinese Idioms Educational Games in TCFL Based on Virtual Reality

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Abstract: In recent years, overseas set off a craze for learning Chinese. Chinese Idioms teaching is important but difficult for foreigners in Teaching Chinese as a Foreign Language (TCFL). The VR educational game should be a good choice to solve the problem with education, entertainment, and high immerse. In this study, 'Yu Gong moves the mountain' is designed as an example. Unity 3D is the main development tool, Leap Motion is interactive way, and also doing an interview with some findings and conclusions. Comparison of textbooks or teachers explaining, VR Chinese Idioms educational game can enhance most of the learners understanding with intense interest. However, the educational game should be integrated into more entertainment and it costs at least 10 minutes or more to adapt the operation of Leap Motion. In the further research, the VR Chinese Idioms educational games for the TCFL can be better gradually based on this research.

1 Introduction

In recent years, overseas set off a craze for learning Chinese. Development of TCFL is meaningful for promoting Chinese, spreading the excellent culture of the China and enhancing mutual understanding between the Chinese and abroad. What's more, it is significance to enhance China's influence in the world by TCFL. Chinese Idioms are formed in the long-term practice of Chinese people's life. They are usually made of fixed phrase and fixed structure with special cultural connotations. So that, foreign students whose mother language isn't Chinese often think that the vocabulary and emphases in Chinese idioms are real difficulties to get. In fact, most Chinese idioms are generated from the historical story. If new media and teaching theory could be used in Chinese Idioms teaching of TCFL, learners will understand the meaning of Chinese Idioms directly with more fun.

In 2015, VR is developing rapidly, both hardware and software. With rapid popularization of VR, it brings unprecedented convenience and entertainment to human's daily life. The applications of VR have been utilized into many research fields, such as medicine, entertainment, military, electronic commerce and so on. In recent years, with combination of education, VR becomes a widespread focus. The educational games based on VR technology are more entertainment and immersed than normal ones, especially natural human-computer interaction. That's the reason why the educational games are an effective to combine VR and education.

An educational game for Chinese Idioms in TCFL based on VR Technology is designed. After that, some foreign learners are invited to test it. The conclusion of the is shown at the end of this paper.

2 Related Work

2.1 The Related Work of Chinese Idioms Teaching in TCFL

Chinese Idioms teaching plays an important role in TCFL to foreign learners. No only expanding their vocabulary, but also improving their ability to express and reading. And it helps them understand Chinese traditional culture. Because of the bias form, semantics, grammar, and pragmatics, foreign learners usually think Chinese Idioms learning is a difficulty. In traditional TCFL, teaching structure method, correction method and translation method are often adopted. In those methods, students can't teach in accordance with their aptitude with lower efficiency and effect.

Bo HONG (2003) points out that foreign students who are learning Chinese Idioms can't accurately understand the Chinese Idioms meaning. It's not clear idiomatic collocation, is also not clear about the usefulness of Chinese Idioms. He also analyzes bias in TCFL and thinks that that the Chinese idioms teaching should be focused on three points: the meaning of the Chinese Idioms teaching; Chinese Idioms pragmatic and collocation of idiom teaching.

Lina SHEN (2007) affirms teaching Chinese to foreign research results of TCFL in the ten years and predicts that idiom teaching research in TCFL tends to be diversified.

According to the source, Juan FENG (2011) analyses the characteristics of Chinese Idioms and the necessity for learning. And he comes out eight teaching methods in TCFL: function method, contrastive method between

3.3 Game Design

Educational games design is not only to consider the education but also to consider the entertainment. Educational game designers have the plan to allow learners to complete some goals, and learners should achieve educational goals. The task design of educational games is shown in the following three tables.

Table 1. Previous tasks in educational game design.

	Content	Level	Time
Task 1	Have conversation with Yu Gong	Simple	2 mins
Learning objectives: Understanding the reason for moving mountain.			
Task describe: In a trip, you find that an old man is digging a mountain with tools, feeling very strange, and then stepped forward to ask the reason.			
	Content	Level	Time
Task 2	Have a look at surroundings	Simple	2 mins
Learning objectives: Analysing feasibility of ‘Yu Gong moves the mountains’.			
Task describe: There are two mountains near his house. They are so high and big that it took a long time to walk to the other side. Yu Gong tells his family that they should all help him to move the mountain.			

Table 2. Middle tasks in educational game design.

	Content	Level	Time
Task 3	Cheer Yu Gong up	Medium	3 mins
Learning objectives: Understanding the spirit of ‘Yu Gong moves the mountains’.			
Task describe: One day, Zhi Sou sees Yu Gong and his children when they are working on moving the mountains. He tells Yu Gong that he could never do it because he is old and weak. You should cheer Yu Gong up.			
	Content	Level	Time
Task 4	Help Yu Gong move mountain	Difficulty	5 mins
Learning objectives: Analysis feasibility of moving the mountain.			
Task describe: As soon as the Zhi Sou finished talking, Yu Gong said that his family could continue to move the mountains after he died. His family would live and grow, but the mountains could not get bigger.			

Table 3. Final tasks in educational game design.

	Content	Level	Time
Task 5	To have Conversation with Yu Gong	Difficulty	5 mins
Learning objectives: Summarize Yu Gong 's spirit and learn how to tells others.			
Task describe: To explain the great determination and courage of Yu Gong to god and ask for the help.			

3.4 Scene creating

The high immersive virtual learning environment can stimulate learners' interest, arise the enthusiasm of learners so that learners participate and immerse them actively. The modeling tool is Using 3D, a Chinese traditional scene for the educational game is created, as shown in Figure 2.



Figure 2. Scene creating of ‘Yu Gong moves the mountain’.

Learners in the virtual environment when roaming through the rotation of the head of the action, to trigger the VR head wearing a display device in the mobile terminal of the gyroscope positioning function, learners will be able to observe the living environment of the ancients from 360 degrees different perspective.

3.5 The interactive way

The interactive way is a key part pf educational game design, including interface, NPC, controller and so on. Because VR belongs to the 3D media, it is not accurately by 2D. In the traditional desktop virtual reality system, users can only rely on the mouse to move and other ways to change the viewing angle. In this study, Motion Leap is the input of the educational game learner, as shown in Fig.3.

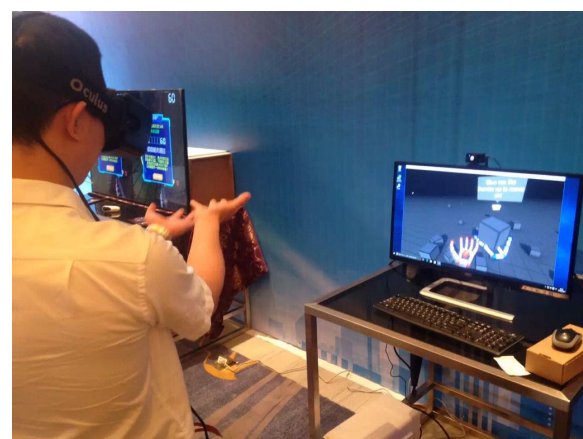


Figure 3. The interactive way of ‘Yu Gong moves the mountains’.

The key part of code that makes combination with Unity 3D and Leap Motion is given:
public class FingerMatch

```
{
static readonly float FingerBendState_Radian =
Mathf.PI*4f / 18 ;
static readonly float FingerStrightState_Radian =
Mathf.PI/12;
public static bool StrightState(FingerData fingerData,
float adjustBorder=0f)
{bool isStright =false;
Vector disalDir = fingerData.m_Point.m_Direction;
if (!disalDir.Equals(Vector.Zero))
{Vector fingerDir = fingerData.m_Point.m_Position -
fingerData.m_Position;
float radian = fingerDir.AngleTo(disalDir);
if (radian < FingerStrightState_Radian + adjustBorder)
{isStright = true;}}
return isStright;}
public static bool BendState(FingerData fingerData, float
adjustBorder=0f)//,out float eulerAngle)
{bool isBend = false;
Vector disalDir = fingerData.m_Point.m_Direction;
if( !disalDir.Equals(Vector.Zero) )
{Vector fingerDir = fingerData.m_Point.m_Position -
fingerData.m_Position;
float radian = fingerDir.AngleTo(disalDir);
if (radian > FingerBendState_Radian + adjustBorder)
{isBend = true;}}
return isBend;}
}
```

Motion Leap can recognize the meaning of the user's gestures, and learners control the educational game as a natural human-computer interaction. In the case of the "Yu Gong moves the mountains", "Hands parallel expansion" on the leap Motion refers to moving in the educational game. If learners want to talk with the NPC, they should make a fist on the Leap Motion around the NPC. Scratching gesture stands for that mountain is bored. Users are helping Yu Gong to move the mountain.

4 Conclusion

After the development of Chinese Idioms Educational Games in TCFL, there are some findings. Comparison of textbooks or teachers explaining, VR Chinese Idioms educational game can enhance most of the learners understanding with intense interest. However, some feedbacks are negative. The educational game should be integrated into more entertainment. It costs at least 10 minutes or more to adapt the operation of Leap Motion.

According to current researches (Chinese Idioms teaching in TCFL and educational games), an idiom educational game for the TCFL based on VR is feasibility planning. In this study, 'Yu Gong moves the mountain' as a case is design and tested. After the interview, it should be improved, such as education and entertainment of the educational game are needed to be balanced. In the further research, the VR Chinese Idioms educational games for the TCFL can be better gradually. It will be an effective solution for promoting development in the TCFL.

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