Innovative Pictogram Chinese Characters Representation

J. H. Low, S. H. Hew, C. O. Wong

Abstract—This paper proposes an innovative approach to represent the Pictogram Chinese Characters. The advantage of this representation is using an extraordinary representation to represent the pictogram Chinese character. This extraordinary representation is created accordingly to the original pictogram Chinese characters revolution or transition. The purpose of this innovative creation is to assist the learner to learn Chinese as second language (CSL) in Chinese language learning, specifically on memorizing Chinese characters. Commonly, the CSL will give up and frustrate easily while memorizing the Chinese characters by rote. So, our innovative representation helps on memorizing the Chinese character by visual storytelling. This innovative representation enhances the Chinese language learning experience of the CSL.

Keywords—Chinese E-learning, Innovative Chinese character representation.

I. INTRODUCTION

CHINESE Characters is one of the ancient languages in the world. The earliest known form that was found on the "oracle bones" were the earliest form of Chinese writing which dates back up to five millennium ago. The Chinese Characters are unlike other alphabetical languages, such as, English, Malay and Arabic, formed with no combination of alphabet to represent the phonetic of the Chinese language. In fact, the Chinese Characters use logographic to convey the meanings and sounds that indicate the meanings.

TABLE I
COMPARISON OF CHINESE CHARACTERS APPEARANCE AND ENGLISH

Hill	Wood
山	木

According "TuShuo Han Zhi"（图说汉字）[1], the logographic of Chinese Characters are divided into six categories namely, Pictograms Chinese Characters（象形）, Simple Indicative Chinese Characters（指事）, Compound Indicatives Chinese Characters（会意）, Phono-semantic Chinese Compound Characters（形声）, borrowed Chinese Characters（假借）and Derived Chinese Characters（转注）.

Pictograms Chinese Characters is the very initial approach to create the Chinese Characters. The original creation of Pictograms Chinese Character is created by observing the human posture, the human gesture and natural scenario. Then, the observation will be pictured into an abstract symbol based on their most conspicuous as in Fig. 1.

However, some of the abstract meanings are difficult to represent in drawing, therefore some of the Chinese Characters creation methods will be used to enhance the original meaning of the pictographic characters. This is the reason why the idea of six methods creation came in.

Today, the number of Chinese Characters is increasing. This is due to the Chinese's economic and political importance in global arena. This has caused some of the countries like New Zealand, Sweden, French, German, and Spanish to make Chinese language as a compulsory subject or additional foreign language for the students [2], [3]. This has reflect the importance of Chinese language in the globe stage

Fig. 1 Pictogram Chinese characters of mouth (口)

However, Chinese language is usually hard to master, especially for the learner who learns Chinese as a second language (CSL) or foreign language. This is because Chinese's tonal system is hard to master specifically for westerners, while the meaning of English vocabulary does not change according to different tone.

In addition, as mentioned in the previous paragraph, Chinese Characters do not use alphabets to form. The appearance of each of the Chinese Characters is unique and there is nothing that corresponds to an alphabet. You need to repeat writing the "components" to make the Chinese Characters in order to memorize by rote. In fact, this is very different from the alphabetical language, such as, English, Malay and Tamil are written. So we conclude that a good memory is required to learn Chinese Characters.

In the online and offline market, there are many apps in Chinese learning for CSL in e-learning and CSL in blended learning. Furthermore, quite a number of apps focus on the methods to memorize the Chinese characters, and of course each method has its pro and cons.

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World Academy of Science, Engineering and Technology
International Journal of Industrial and Manufacturing Engineering
Vol:8, No:2, 2014

TABLE II
SIX CATEGORIES OF CHINESE CHARACTERS

Pictograms Chinese Characters (象形)	木
Simple Indicative Chinese Characters (指事)	本
Compound Indicatives Chinese Characters (会意)	林
Phono-semantic Chinese Compound Characters (形声)	淋
Borrowed Chinese Characters (假借)	来
Derived Chinese Characters (转注)	老

II. APPS FOR MEMORIZE CHINESE CHARACTERS

Nowadays, there are a lot of Chinese language apps that emphasizes on how to memorize the Chinese Characters. Some of the apps are fun and easy to use. Nevertheless, some of the apps are difficult to use and boring.

Flash card is one of the earliest methods that are used to memorize the Chinese Characters. Flash card is a set of cards that contains a series of the Chinese Characters. Commonly, flash cards use in the classroom and self-study facility. The CSL will repeat reading and viewing the flash in order to memorize the Chinese vocabulary. Currently, the electronic versions of flash cards are available in offline and online apps. The online Chinese Character Flashcards and the Yellow Bridge Flashcards are two examples of flashcards apps [4], [5] as in Fig. 2. Furthermore, mobile versions of flash cards are created too and CSL can download it via Google Play and Apple Store. Therefore, this situation has enhanced the time for the CSL to engage with the Chinese vocabulary anytime and anyplace.
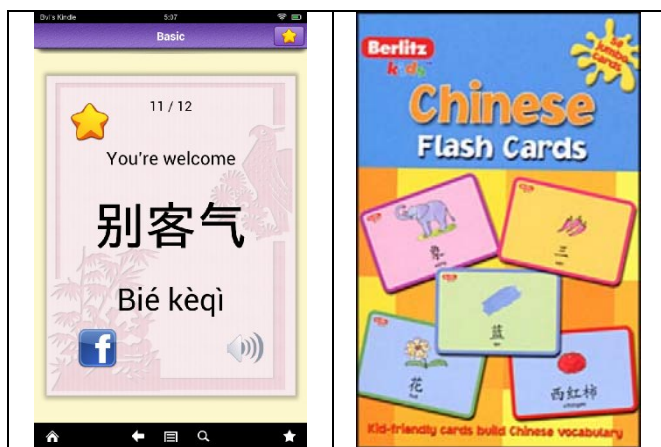

Fig. 2 Online Flash Cards Apps (left side) and offline flash cards (right side)

Beside the flash cards, matching words apps is the other earliest method that is used to rote memorizing the Chinese Characters. In matching words apps, first, the CSL is required to study and memorize the Chinese Character. Then, the CSL is required to recall back the characters and match the characters accordingly. Student may match the words either with the correct images or the correct words. Fig. 3 shows a matching app in android application [6].

Both learning apps, flash cards apps and matching words app, are either using the static images and foreign language words to help the CSL to memorize the Chinese vocabulary. In fact, these apps have limitations in learning experience. The CSL cannot enjoy much on the learning and just experience the rote learning, which is alike on how a parrot learns to speak. Frequently, the CSL will be disappointed with the learning experience in Chinese language and give up at the end.

In the internet, some wiki alike apps, such as NCIKU [7], as in Fig. 4, and Online Pictogram Dictionary [8], are developed to help on memorizing Chinese characters. These wiki alike apps provide the details information and properties of the Chinese Characters, such as the strokes sample, stroke order, the meaning of the characters and the pronunciation of the characters. Basically, this "wiki alike apps" work as the dictionary which provide the characters information to the CSL, but there are no approach that teach the user on how to memorize the word. Again, CLS requires memorizing the Chinese characters by rote.

Apps that use storytelling approach are available in the internet too. Commonly, the storytelling explains how the evolution or transition of Chinese Characters happen and the meaning of the transition by using the 2 dimension (2D) or 3 dimension (3D) animation or video. In fact, storytelling is very effective to engage the learner with the storytelling content [9], [10]. Some interactive and interesting video has been developed and published in the YouTube. These serve as storytelling purpose. In addition, this storytelling animation and video are not only developed by the TV production in China [11], the Chinese speaking country, it is also developed by the Japanese TV production too [12]. One of the drawbacks of this program is that it normally provides massive information and it might mislead the CSL in memorizing the Chinese Characters. Furthermore, CSL would experience difficulty in understand the meaning of the Chinese Characters via the original evolution.

Therefore, an easy understanding and creative Chinese evolution or transition should be introduced and embedded into the apps in order to aid the CSL to understand and memorize the Chinese Characters.
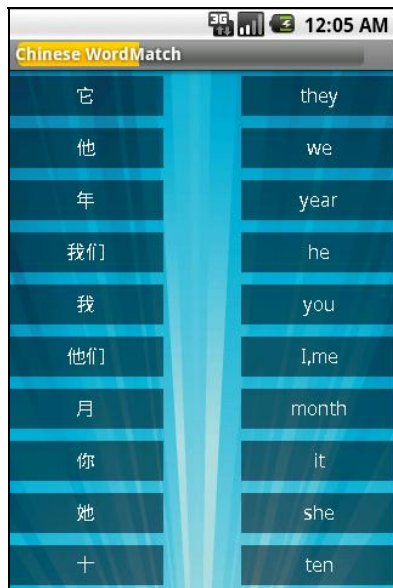
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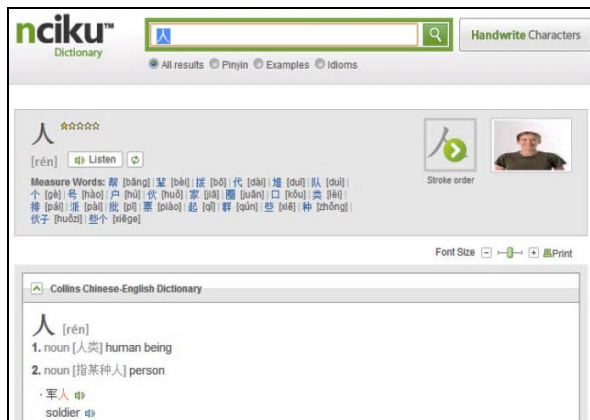Fig. 3 Matching words example in an android app

Fig. 4 Wiki like apps - NCIKU

III. PROBLEM ANALYSIS ON EXISTING EVOLUTION APPS

There are a lot of apps that use the original Chinese characters transition idea to represent the Chinese Characters, specifically for the pictogram Chinese Characters. The idea of the creation of pictograms Chinese characters is progressively lost their pictographic identity, as they made the transition from the oracle script to the regular script, which is the Chinese Characters that we use today. In fact, some of the transitions are very difficult to understand especially for the CSL. The CSL cannot catch or understand the logic of the translation, and the CSL might get confused too. Let's take the example of moon "月" and sun "日", as in Table III. It is quite hard to understand the logic that a "dote" appears at the centre of the sun's and the moon's in the bronze script. This is because in reality, the "dote" does not exist in the sun and the moon in the regular script. In terms of the appearance, it is more relevant to other objects. For instance, the appearance of moon in bronze representation looks like a human eye rather than the moon. Therefore, a confusion in understanding occurs and it will bring up a confusion and misconception to the CSL.

Therefore, it is reasonable to introduce an innovative pictogram Chinese Characters that help the CSL to memorize the Chinese Characters easily and rapidly.

TABLE III
THE EVOLUTION OF CHINESE CHARACTERS

Oracle	Bronze	Seal	Traditional	Regular

Therefore, to get further information and understand about the problem that is faced by the CSL while memorizing by rote with tradition transition of Chinese Characters, first, we need to formulate a questionnaire for Chinese teachers in national primary schools with the following questions:

- What are the important skills students need to master learning the Chinese characters?
- Can you describe the primary teaching methods you used to help students improve their language skills?
- What are the difficult concepts for students learning Chinese characters?
- Can you describe some primary teaching methods you used to help students resolve the difficult concepts?
- Are there any tools in teaching to help children learn Chinese characters? If so, what are they and how to use them?
- What are the advantages and disadvantages of current textbooks and related materials?
- What are the main methods used in testing and examinations?
- How many Chinese characters are required in primary school language education?
- What is the difference in education methodology between students in lower grades and higher grades?
- Are there any tools and materials used by students in learning Chinese characters after class?

According to the questionnaire above, we interviewed two Chinese language teachers in two national primary schools in Klang Valley, Malaysia. The students that we referred to were the CSL. The first school was located at Rawang, Selangor, Malaysia and the second school was located at Puchong, Selangor, Malaysia. Both of the schools were among the national primary schools that offer Chinese language to CSL as foreigner language. From the interview, we got a lot of information about the current status in learning Chinese characters, and also some important fact which could help us to identify the problems that we should focus on.

For the students, there are at least four major requirements in the process of learning a Chinese language, namely, listening, reading, writing and speaking. In the national primary school

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students, speaking and reading are the most important since the students are not a native Chinese speaker. To master on the Chinese Characters, the student required to master on the pronunciation, recognize the character and understand the context usage of the characters. In the primary standard one syllabus, students are required to memorize and recognize 201 Chinese characters. In fact, it is a quite challenge for primary standard student.

The large number of Chinese characters to be memorized is the only problem faced by the learners. The students tend to forget the Chinese characters, unlike alphabets language such as Malay, English, and other Latin languages where students able to memorize language. Therefore, this is a big challenge to improve the approach on how to memorize the Chinese characters.

Currently, in the school, the teachers have applied some methods in order to enhance the learning environment for the students. Normally, the teachers will use flash cards in order to let student to memorize the Chinese characters by rote. The students will read aloud repeatedly while the cards are flashed thru one by one. In terms of technology, the teachers use some of the electronic teaching material in order to aid the students to memorize the Chinese characters by rote. Basically, those materials are serving as the electronic flash card, and the function is exactly the same as the conventional flash cards that is available in the market.

As in our observation on the Chinese class learning activity, we realize that the students cannot fully concentrate on the Chinese language class activity. This is because the Chinese characters look new and weird for them. In order to engage the students with the fresh look of the Chinese Characters, the teachers should not use normal or common approach to teach the students, instead creative and innovative approaches should be allowed in the national school Chinese Classes. Accordingly to the teachers, they will use any teaching approaches as long as the students are able to memorize the Chinese Characters.

Although conventional and electronic flash cards are the easiest way to learn the Chinese characters but it is not effective. In addition, seem like the flash card is quite challenge to engage to the students. According to the teacher that we consulted, we concluded that, the biggest problem in memorizing the Chinese characters might be on how to motive the students' interest while learning the Chinese language. In addition, what is the best evaluation or transition should be used for the student to learn Chinese characters.

IV. INNOVATIVE REPRESENTATION FOR PICTOGRAM CHINESE CHARACTERS

Pictogram characters are the earliest form of the Chinese characters. Pictogram Chinese characters are formed by abstract drawing of the objects they represent. These Chinese characters have evolved from their very original object representation to the current representation thought many phases as in Table III. These phases are namely as Oracle script, Bronze script, Seal script, Official script and Regular script. Table IV shows when the script is created and the sample of the characters.

As we know that pictogram Chinese characters is created by transits thru a series of representation from oracle scripts to regular script. While the character transits over the dynasty, some parts or structures of the characters have been omitted. This happened to standardize the Chinese characters on that particular time or dynasty.

Let's check up with the word of moon (月) as in the Table III. The representation of the moon is abstracting alike with real moon. But in the bronze script representation, there is a "dot" at the centre of the character. As we play our evolution video to the national primary students, they were confused with the outlook of the evolution video. Most probably the students were confused and responded that the "dot" should not appear. This situation is happened too with the other representation too, for example the Chinese characters of sun (日). Therefore, we believe that the evolution representation might create a confusing situation for the students.

Therefore, a modification version of evolution representation should be used in order to enhance the understanding of the CSL.

TABLE IV
DESCRIPTION OF CHINESE CHARACTERS REPRESENTATION OVER THE TIME

Script Type	Sample	Time
Oracle Script		Around 5000 years ago.
Bronze Script		Around Western and Eastern Zhou dynasty.
Seal Script		Around Qin dynasty.
Traditional Script		Before 1950an, this form still use in Taiwan, Macau and Hong Kong.
Regular Script		After 1950an.

V. THE EFFECTIVENESS OF INNOVATIVE CHINESE CHARACTERS

In our innovative representation, we modified some parts of the evolution in order to enhance the smoothness and relevancy of the evolution. The modification will be conducted according to the suitableness of the word. As in the Table V, the word of moon and sun, we have done some modification. This modification has significantly enhanced the relevancy of the words while the character used to transit from one script representation to another. The objective of the modification is to ensure that the transition of the word is more relevant to the appearance of the character according to the current time.

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TABLE V
SUGGEST INNOVATE REPRESENTATION OF CHINESE CHARACTERS

Oracle	Bronze	Seal	Traditional	Regular

To investigate on the effectiveness of the representation, we have conducted another round of the study with the Chinese language class that was conducted in national primary school. In addition, we observed the class learning process again with the following question:

• Are the students concentrate on the innovative representation of the Chinese Characters?
• Can you describe how the innovative representation helps students improve their language skills?
• What are the difficult concepts for students to use the innovative Chinese Characters?
• Isn't a good tool for the CSL to learn Chinese Characters by using innovative representation? If so, what are they and how to use them?
• What is the difference way to use the innovative representation between students in lower grades and higher grades?
• Isn't a good tool to be used by students in learning Chinese characters after class?

From our observations and interviews with the teachers in the national primary school, we found out that the concentration of the students increased. This is because the innovative representation was more engaging and relevant to the students, and the students could easily catch and understand the meaning of the Chinese characters. In addition, the students felt the innovative representation is more like a storytelling. It was fun and easy to study now.

This representation helps the CSL to understand the Chinese characters by visualization approach rather than memories by rote. This innovative representation eliminated some understanding doubt while the transition took place. Therefore, this innovative representation is more effective compared to the original representation of the Chinese Characters. Therefore, this will enhance the memorize action experience of the CSL while learning Chinese Characters. For the teacher, they can use our innovative representation to explain the meaning of the characters by storytelling. In other word, this innovative representation helps teachers to deliver a story smoothly.

The teachers commented that, this innovative representation was effective and helped a lot to deliver the Chinese language in national primary school. In addition, this innovative representation also served as a guideline to customize the syllabus on memorizing the Chinese characters. The teachers also commented that, it would be good that this innovative representation to be embedded as an apps to assist the CSL to memorize Chinese characters. At the same time, it will motivate the CSL to learning the Chinese characters in fun environment.

VI. CONCLUSION

We proposed an innovative representation of pictogram Chinese characters for the CSL. Some of the pictogram Chinese character was not relevant with the real object and we modify the transition or evolution of the Chinese characters in order to enhance the meaning of the character, in order to let CSL to memorize the Chinese characters easily. Therefore, this innovative representation will reduce the curiousness of the CSL while memorized the Chinese characters by rote.

For the future development, our innovative representation can be able to embed into different learning apps. We hope that our proposed innovative representation will help a lot in other apps specifically for the CSL apps. Our intention of the representation is to aid the CSL to memorize the Chinese characters easily and we do not have the intention to replace the original idea of pictogram Chinese Characters.

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