

Development and Evaluation of a Chinese Character Educational Board Game for Non-Native Learners

Lee Chai Chuen*

lcc76@uitm.edu.my

Academy of Language Studies

Universiti Teknologi MARA (UiTM) Kedah, Malaysia

Nor Azrina Mohd Yusof

yina1437@uitm.edu.my

Faculty of Accountancy

Universiti Teknologi MARA (UiTM) Kedah, Malaysia

Corresponding author*

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ABSTRACT

There is no doubt that knowing Chinese gives graduates a competitive advantage. The ability to communicate fluently in Chinese has long been a requirement for Chinese employers, particularly those looking to do business in China's e-commerce market. Non-native learners must master four fundamental abilities in order to become literate in the Chinese language: listening, reading, writing, and speaking. Previous research has found that writing Chinese characters is frequently the most difficult task for both non-native and native learners. The issue arises during the process of learning Chinese characters and excessive use of gadgets, while online learning inspires both researchers to create a Chinese educational board game dubbed the LiSCReW Family Board Game (LiSCReW). LiSCReW is an acronym for Listen, Speak, Count, Read, and Write. The purpose of this study is (i) to develop and evaluate the effectiveness of the LiSCReW for learning Chinese characters; and (ii) to share non-native learners' perspectives and experiences while playing LiSCReW during a one-day exhibition at Universiti Teknologi MARA (UiTM) Johor Campus. To facilitate playtesting and evaluation of the board game, a total of 22 students from UiTM Johor were conveniently selected. The findings indicate that the LiSCReW board game is an effective educational tool for learning Chinese characters. The results show that respondents are more confident in recognising Chinese characters (90.9%), pronouncing Chinese characters (68.2%), reading Chinese characters (54.6%), and applying the Chinese characters they learned while

playing LiSCReW to their Chinese test (77.2%). The findings can be used to guide future research into the empirical testing of Flow Theory's applicability among a large number of respondents.

Keywords: Chinese characters, educational board game, Chinese language, Flow Theory

INTRODUCTION

The ability to communicate in the Chinese language has become a great advantage for job-seeking students. In line with the establishment of the Digital Free Trade Zone in 2017 which was inaugurated by the former Sixth Prime Minister, Dato Sri Najib Tun Razak and Jack Ma, Director and Executive Chairman of Alibaba.com from China, there is no denying that mastering Chinese language is an added value to graduates. The ability to speak and write in Chinese fluently has been a key criterion for offering employment opportunities by Chinese employers who are interested in doing business in China's e-commerce market. The Digital Free Trade Zone, which uses physical and virtual zones, has made the international e-commerce process possible without borders. Besides, due to the process, which is online and digital services, the discussions can take place anywhere regardless of time. Therefore, the inability to communicate in Chinese can no longer be used as a boundary since the communication process has become the backbone of daily activities in China's ecommerce market.

Undoubtedly, the establishment of China's e-commerce market indirectly influenced Chinese to become the language of second choice (Eleena, 2020). In Malaysia, most public universities offer Chinese as their third language course. Hoe et al. (2014) reported that the Department of Chinese Studies at the University of Malaya has become the pioneer in introducing Chinese to non-native learners, followed by all 20 public universities in Malaysia. Each university has their own curriculum objectives that have been approved by the Ministry of Higher Education. As a result, some universities use the Hanyu Pinyin system (Rumi system), while some universities such as UiTM use the Hanyu Pinyin system with Chinese characters in teaching Chinese. Although the teaching methods are different, they share a similar objective, which is to ensure their students master additional foreign languages before they seek employment. For instance, in January 2020, an ex-student from Universiti Tunku Abdul Rahman (UTAR) who previously worked as a producer with RTM became the first Malay newsreader to read Berita Mandarin on RTM (TV2) (Wawann, 2020).

Non-native learners must master four basic skills in order to become literate in the Chinese language: listening, reading, writing, and speaking. Previous research has found that writing Chinese characters is frequently the most difficult task for both non-native and native learners (Lan et al., 2015; Lim et al., 2019). Our assumption is that there are still some non-native learners who are unable to read and write Chinese characters, even though they have been studying the language for many years. The plausible explanation is that the Chinese language employs a logographic language system as opposed to the alphabetical systems used by English and Malay languages. In contrast to the English and Malay languages, which both use 26 letters to spell words (Chua et al., 2015; Sung, 2011), the Chinese language uses 24 basic strokes that are combined differently to form radicals. It's worth noting that this radical is the foundation for creating the characters.

The learning process for radicals becomes difficult due to the variety of radicals. Although the characters have similar phonetic components, their pronunciation may differ due to different radicals. According to Chua et al. (2015), the problem arises when there is a writing error, such as a small addition or reduction in character strokes, which has an impact on the semantics of the characters. For non-native learners, this makes learning Chinese characters extremely difficult and boring. According to previous research (Chua et al., 2015; Moser, 1991), non-native learners must memorise and learn a large number of Chinese characters in order to become literate in the Chinese language. They must memorise within a certain time frame, which is determined by simple copying and memorising. When there are a large number of Chinese characters to remember, the situation becomes worse because they may forget the characters they learned previously. As a result, even if it is only a brief note in Chinese, they will struggle to recognise, read, and write Chinese characters.

Previous research has suggested that active teaching techniques such as games can increase learner engagement and excitement during the learning process (Goh & Yee, 2015; Poole et al., 2019; Wen et al., 2020; Wen, 2018). For example, Goh and Yee (2015) discovered that their students agreed that using a Chinese character puzzle game activity aided their Chinese character learning. Similarly, Wen (2018) discovered that using digital games can improve both Chinese character learning performance and collaborative learning quality. Poole et al. (2019) introduced a board game that has been shown to improve Chinese learning by creating a learning environment that encourages peer learning and reduces learners' fear of failure. While a recent study by Wen et al. (2020) discovered that learners who used board games were able to use Chinese characters more accurately and achieve higher learning outcomes,

Recognizing the difficulties that non-native learners face when learning Chinese characters, some integration in the teaching method is required. According to Intan Marzita et al. (2019), lecturers must align their teaching methods to meet the current demand. Furthermore, to promote equitable quality education and lifelong learning for all, which is one of the United Nations Sustainable Development Goals for 2030 (United Nations, 2015), it has become our responsibility as lecturers, as key players in the education industry, to integrate traditional teaching methods with active teaching techniques such as the use of educational board games in the teaching and learning process. An active teaching approach is preferable because it promotes deeper levels of thinking and makes information encoding, storage, and retrieval easier (McGlynn, 2005).

Furthermore, prior to the COVID-19 pandemic, the term "Education 4.0" was coined, which refers to the alignment of humans and technology to enable new possibilities (Anealka, 2018). Without a doubt, technological advancements may benefit many students by enabling them to access and learn from anywhere at their convenience. At the same time, students must devote more time to gadgets such as their mobile phone. For example, Pratama (2018) discovered that Indonesian university students spend more than 5 hours per day on technological devices such as smartphones. Not to mention that, during the COVID-19 pandemic, all teaching and learning processes were carried out online. Students may spend more hours per day solely on education. (2021) discovered that 19% of 138 Indian high school and college students spend 4 to 6 hours per day on electronic devices, with 4.4 percent spending more than 8 hours per day. Ramane et al. (2021) discovered that 19% of 138 Indian high school and college students spend 4 to 6 hours per day on electronic devices, with 4.4% spending more than 8 hours per day.

A similar occurrence was noticed among university students in Malaysia. Students spend the majority of their time on gadgets, primarily for online lessons, peer conversations, and exam seats, leaving little time for their families. Furthermore, during the COVID-19 epidemic, most universities used online distant learning in their teaching and learning procedures. A similar circumstance arose with UiTM students. The majority of students learn Chinese through online platforms such as Google Meet, Webex, and Teams, while some lecturers provide students with a recorded video. Some students spend over eight hours a day staring at their laptops or smartphones. It's not a good thing because spending too much time with devices might lead to major health issues in the future.

The problem arises while learning Chinese characters as well as too much usage on gadgets while online learning provides an idea to both researchers to create a Chinese educational board game which is called as LiSCReW Family Board Game (LiSCReW). LiSCReW means, *Listen, Speak, Count, Read and Write* was created with the objective to ensure non-native learners will be able to learn pronunciation, speak, count numbers 1 to 99, read, and write Chinese characters accurately. The LiSCReW will complement existing educational board game such as *Conveyance Go* that was developed by Wen et al. (2020). First, LiSCReW provides QR Code for non-native learners to learn pronunciations themselves. Second, a very bright and colorful cue cards and board game was designed to ensure non-native learners feel happy while playing and learning. Third, LiSCReW was designed to suit not only for UiTM students who take Chinese Course Level 1, but also other non-native learners who are at beginner level such as kindergarten and primary school. Lastly, as the name of LiSCReW Family Board Game implies, it was designed based on childhood board game (e.g., snake and ladder) with the intention to let non-native learners play during their family time.

The issue arises during the process of learning Chinese characters and excessive use of gadgets, while online learning inspires both researchers to create a Chinese educational board game dubbed the LiSCReW Family Board Game (LiSCReW). LiSCReW is an acronym for Listen, Speak, Count, Read, and Write. It was created to ensure that non-native learners can accurately learn to pronounce, speak, count numbers 1 to 99, read, and write Chinese characters. The LiSCReW will complement existing educational board games, such as *Conveyance Go* by Wen et al. (2020). To begin, LiSCReW provides QR Codes to assist non-native learners in self-learning the pronunciation. Second, a vibrant and colourful set of cue cards and board game were created to ensure that non-native learners enjoy themselves while playing and learning. Thirdly, LiSCReW was created for non-native learners at the beginner level, such as those in kindergarten and primary school, as well as UiTM students enrolled in Chinese Course Level 1. Finally, as the name implies, the LiSCReW Family Board Game was inspired by childhood board games (e.g., snake and ladder) with the goal of allowing non-native learners to participate during family time.

To the best of our knowledge, there were a few educational board games marketed for learning Chinese characters at the time of study. The majority of board games were created with the purpose of teaching English (e.g., Sahibba) or business (e.g., Saidina). The development of the LiSCReW family board game can add to the body of knowledge relating to the effectiveness of board games in the context of Chinese character learning. Additionally, the development of the LiSCReW board game can serve as a foundation for future work on cognitive-affective state

classification, such as flow. Thus, this study aims (i) to develop and evaluate the effectiveness of the LiSCReW board game for learning Chinese characters; and (ii) share the thoughts and experiences of non-native learners who took part in LiSCReW playtesting at a one-day exhibition at UiTM Johor

LITERATURE REVIEW

Flow Theory in Board Games Based Learning

Board games are created to have a positive impact on players, and they are most successful and engaging when they facilitate the flow experience. This study was guided by Flow Theory (Csikszentmihalyi, 1975). Flow theory says that happiness is the goal that people persuade themselves to achieve (Csikszentmihalyi, 1990). It was first identified by Csikszentmihalyi when he studied chess players, rock climbers, and dancers (Csikszentmihalyi, 1975). Flow describes a state of complete absorption or engagement in an activity and refers to the optimal experience (Csikszentmihalyi, 1990). During optimal experience, a person is in a psychological state in which he or she is so fully immersed in the goal-driven activity that nothing else appears to matter. According to Csikszentmihalyi (1990), when people feel happy, the flow experience will follow, which means that, if people focus on the context of some activity, they will get rid of nothing to do with it. Thus, pleasant, and positive emotions will arise.

There are nine characteristics that are used to describe flow (Csikszentmihalyi, 1990; Moneta, 2012): (1) balance of challenge and skill; (2) clear goals; (3) unambiguous feedback; (4) focused concentration; (5) merging of action and awareness; (6) loss of self-consciousness; (7) perceived control; (8) time distortion; and (9) autotelic experience. Nakamura and Csikszentmihalyi (2009) grouped these nine characteristics into antecedents (1-3), subdimensions (4-8), and consequences (9) of flow. A substantial amount of research has documented the positive relationship between flow and performance in various contexts, such as playing games (Engeser & Rheinberg, 2008), exercising sports (Stein et al., 1995), or making music (Wrigley & Emmerson, 2011). This positive relationship is derived from the flow subdimensions, which describe a highly functional state (Engeser & Rheinberg, 2008).

In our daily lives, situations where challenges and abilities are matched are rare, as the majority of activities in which we participate do not require goals, feedback, concentration, involvement, or skill acquisition. However, in the context of this study, perhaps board games can be designed with some challenging tasks that are appropriate for the learners' level based on the characteristics stated by Csikszentmihalyi (1990) and Moneta (2012). Previous research has shown that the flow experience improves learning (Webster et al., 1993), which should be considered when designing learning materials, including board games. educational games should be designed to be less complex and more casual in order to achieve a better balance of education and entertainment. Chen et al. (2020) asserted that when a game is casual, easy to learn, and has simple rules, learners are less distracted during study because they are not required to use as much brainpower. When non-native learners play LiSCReW board games with their friends or family members on a regular basis, they may remember everything they did during the activity process,

which can help them learn Chinese characters¹. As a result, being in flow can result in increased personal well-being, motivation, and performance (Fullagar & Kelloway, 2009).

Challenges of learning Chinese characters

Previous research (Chua et al., 2015; Moser, 1991; Sung & Wu, 2011; Wong et al., 2010) has argued that in order to be literate in the Chinese language, learners must memorize and learn a large number of Chinese characters. Moser (1991) claimed that despite knowing 2,000 characters, he couldn't read a newspaper. He claimed that the large number of characters in the Chinese language made it unreasonably difficult to learn. Moser claimed that approximately 3,000 Chinese characters are commonly used in 99% of Chinese written materials. It is not surprising given that there are approximately 80,000 Chinese characters in existence, despite the fact that only 3,000 to 4,000 Chinese characters are used on a regular basis (Pierre, 2018). The phenomena described above demonstrate that a certain knowledge of characters is required to ensure non-native learners' ability to communicate in a Chinese-speaking community (Chua et al., 2015), making it one of the most difficult challenges for non-native learners.

Next, previous studies (Chua et al., 2015; Sung & Wu, 2011) claimed that both English and Malay languages share a similarity whereby these two languages use 26 letters to spell words. However, the Chinese language uses 24 basic strokes combined differently to form radicals that are the basic components of characters. According to Sung and Wu (2011), the radicals will combine with other components to form characters. Su and Zheng (2015) state that in modern Chinese, the smallest Chinese character only have one stroke, such as “一, 乙” etc., and in the modern Chinese dictionary, the most stroked Chinese character is “龘”. The pronunciation is “nàng”, and it has 36 strokes. Learning Chinese characters can be horrifying for non-native learners whenever they see complex Chinese characters with too many strokes.

A third challenge for students is the large number of homophones in Chinese. When it comes to recognizing Chinese characters, Sung and Wu (2011) and Yang (2018) say that the difficulty comes from the fact they have different meanings, but the characters all sound alike. For example, four of the 3000 most used characters have similar pronunciation and tone, /sī/ but different meanings: 思(think), 丝(silk), 私(private), 司(manage). As a result, students will view learning Chinese characters as time-consuming and frustrating.

Why use board games?

With the advent of Education 4.0, the importance of digital technology cannot be overstated. Technology makes students more accessible and allows them to learn at their own pace. Students at higher education institutions, for example, can easily participate in any Massive Open Online Course (MOOC) in the teaching and learning process. According to Anealka (2018), the majority of MOOCs offered by prestigious Malaysian academic institutions are free. Furthermore, she

¹ Flow Theory will be used as a framework. No empirical testing on the effectiveness of the board game will be conducted due to small number of participants who are less than 30.

stated that these MOOCs courses are self-paced, allowing students to learn the courses whenever and wherever they want using the devices of their choice. Students only need a suitable device or gadget to ensure a smooth learning process. So, does this imply that the use of board games in the teaching and learning process has become obsolete in Education 4.0 and, more recently, in Education 5.0 in 2021?

One might wonder why some academics continue to create educational board games. To begin, in the age of Education 4.0, students or learners must have their own device/gadget, which entails an additional cost to purchase a smartphone, tablet, or laptop. Although they can register for any MOOC course or use any free application in the Google Play Store or Apple App Store to learn Chinese, such as Chinese Dictionary Pleco (Lee & Nor Azrina, 2018), they must have their own device. Second, digital courses and games necessitate a strong internet connection. To alleviate the burden on students taking online classes, the Malaysian government provided a free daily 1 GB internet subscription to all pupils and students beginning in April 2020 and ending in September 2021 (Berita Harian, 2021). Third, as Poole et al. (2019) argue, most digital games lack a feature that allows for interactivity among learners. Board games, on the other hand, have a one-time cost, which is the purchase price. There are no hidden fees, such as a monthly internet and renew subscription. Furthermore, board games can promote face-to-face interaction among peers, family members, and lecturers as facilitators. Following that, board games give all non-native learners an equal opportunity to participate in the game. Finally, some board games use a very appealing colour with different board game sizes to make players feel excited and happy while playing. The attractive colour and different board game sizes (for example, from a standard board game to a small carpet size) are important because they allow players to easily watch and play while also feeling joyful.

In recent years, there has been a great deal of research into the use of board games in education. Previous research discovered that educational board games could improve learner experience and add excitement to the learning process. Poole et al. (2019) introduced a board game that has been shown to improve Chinese learning by creating a learning environment that encourages peer learning and reduces learners' fear of failure. They discovered that in only 45 minutes of gameplay, 40 students produced approximately 2,500 utterances that were intrinsically motivated by meaningful goals to complete gameplay tasks and improve the characters of their players. They also claimed that, while it was impossible to confirm that the 2,500 utterances were distributed evenly among all students, mediators reported that all students participated in the game.

According to a recent study conducted by Wen et al. (2020), learners who used board games were more precise in their use of Chinese terms and achieved greater learning results. Additionally, they discovered that board games enable learners to learn by asking questions throughout the game-playing process.

METHODOLOGY

Developmental Research Method

The developmental research method depicted in Figure 1 was adapted from Richey and Klein (2005) and Intan Marzita et al. (2019). In phase 1, a semi-structured interview was conducted with

four teaching lecturers to ascertain their experiences teaching Chinese characters, including difficulties and strategies for teaching Chinese characters. Following that, a semi-structured interview with five potential players was conducted to ascertain their interest in such educational board games, their prior experience with educational board games involving Chinese characters, and their expectations for educational board game features. The interview data will be used to assess the educational value of board games and their efficacy in teaching Chinese characters.

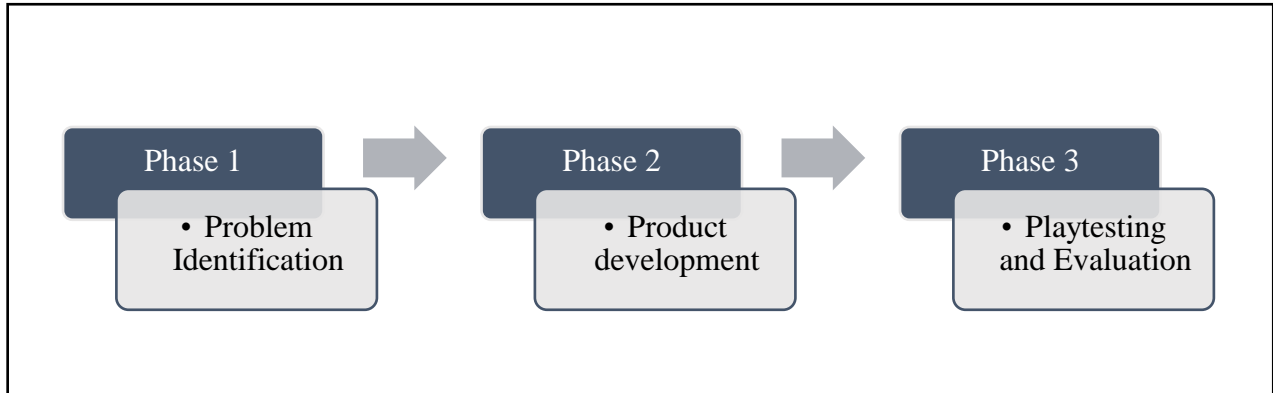


Figure 1 Developmental Research Method

The second phase is the product development stage. The input gleaned from the interviews was incorporated into the product's development. The third phase is evaluation and playtesting. A playtest is intended to uncover design flaws and solicit feedback on how to improve the board game, as well as to determine the effectiveness of LiSCReW in teaching Chinese characters. LiSCReW was put to the test with a group of UiTM students during an exhibition at UiTM Johor. Each of them was conveniently chosen for playtesting and evaluation.

Development and evaluation of LiSCReW board game

Here are four main stages involved in the development and evaluation of the LiSCReW board game. Table 1 shows the stages involved during the development and evaluation process.

Table 1
 Phases of Development and Evaluation of LiSCReW

Phase	Activities in sequential order
Identification of the Problem	<ul style="list-style-type: none"> • Conduct a review of the literature on methods for learning Chinese characters. • Conduct a semi-structured interview with a teaching lecturer. • Conduct a semi-structured interview with potential players to determine the need for such educational board games, their prior experience with educational board games involving Chinese characters, and their expectations of educational board game features. • Identify the desired participants (non-native learners who are at beginner level).

- | | |
|-------------|--|
| Design | <ul style="list-style-type: none">• Determine the gap by conducting a literature review.• Interpret the findings of the two semi-structured interviews.• Choose 32 Chinese characters from the Chinese Course Level 1 syllabus.• Create a storyboard as a template for the board game.• Create a pictograph that resembles a Chinese character to assist students in recognizing and memorizing it.• Create board games that are colourful and appealing so that students can feel happy and enjoy themselves while playing and learning. |
| Development | <ul style="list-style-type: none">• Creating a flowchart to guide the development of a board game.• Converting the design into a board game. |
| Evaluation | <ul style="list-style-type: none">• Conduct a playtest to identify any design flaws and use the feedback to improve the board game.• Distribute a questionnaire to assess LiSCReW's usefulness as an educational tool for learning Chinese characters as well as the board game. |

The samples were chosen using a convenience sampling technique. This study's participants are UiTM Johor students who attended an all-day exhibition on December 1, 2019. 22 students volunteered to participate in playtesting and evaluation sessions to assess the board game and its educational value for learning Chinese characters. Participants were briefed on the game's main features as well as the purpose of the playtesting session. They were given five minutes to explore the game and become acquainted with their surroundings at the start. Then, as the session began, they were given about 15 minutes to play with the game. They'd all successfully finished the exploration game. They were then asked to complete the questionnaire. The data was analyzed and presented as a percentage in the following section, Results.

A questionnaire was created to assess LiSCReW's effectiveness in teaching Chinese characters as well as to gauge students' experiences and opinions while playing. The questionnaire is divided into four sections: personal information, the effectiveness of the LiSCReW board game in helping students learn Chinese characters, the game itself, and other comments. LiSCReW's effectiveness was assessed using a self-efficacy belief evaluation adapted from Aznoora and Siti Nabilah (2017). The purpose of this study is to determine whether respondents believe the LiSCReW is a useful educational tool for learning Chinese characters. The study evaluated the effectiveness using a five-point Likert scale ranging from 1 'strongly disagree' to 5 'strongly agree'. Meanwhile, the game section requested feedback on the game's style and design, ease of instruction/rules, suitability of 32 Chinese characters, and how well the pictures drawn resemble Chinese characters. All questions were graded on a five-point Likert scale, with 1 being "very poor" and 5 being "excellent."

Introduction to LiSCReW Family Board Game (LiSCReW)

The LiSCReW is a fun and easy-to-learn educational board game designed by researchers to help non-native learners learn Chinese characters. Happiness, according to Csikszentmihalyi (1990), is the goal that people persuade themselves to achieve. As a result, LiSCReW features a colorful, appealing, and parents' childhood board game design to ensure that non-native learners are happy and enjoy themselves while playing and learning. Furthermore, for 32 Chinese characters, a picture that resembles a Chinese character has been creatively drawn to help students feel comfortable recognizing and memorizing them. The cue cards used in the LiSCReW family board game are depicted in Figure 2.



Figure 2 Cue cards with pictures that resemble Chinese characters

The LiSCReW family board game comes in a durable box. A fold-out playing board, thirty-two informative cue cards, a sand timer, five playing pieces, 56 game coins, four gold coins, a dice, and a game rule are included in the box. Figure 3 depicts the contents of the box.

The 32 Chinese characters used in the LiSCReW are shown in Figure 4. All the words chosen are from everyday life. Furthermore, it is critical to begin recognizing numbers 1 to 10 in Chinese characters because these characters serve as a foundation for easily reading or writing numbers 11 to 99.



Figure 3 Components inside the LiSCReW box

No	Word	Hanyu Pinyin	Chinese character	No	Word	Hanyu Pinyin	Chinese character
1	One	yī	一	17	Stone	shí	石
2	Two	èr	二	18	Cow	niú	牛
3	Three	sān	三	19	Goat	yáng	羊
4	Four	sì	四	20	Horse	mǎ	马
5	Five	wǔ	五	21	Rabbit	tù	兔
6	Six	liù	六	22	Bird	niǎo	鸟
7	Seven	qī	七	23	Worm	chóng	虫
8	Eight	bā	八	24	Water	shuǐ	水
9	Nine	jiǔ	九	25	Well	jǐng	井
10	Ten	shí	十	26	Duck	yā	鸭
11	Soil	tǔ	土	27	Chicken	jī	鸡
12	Flower	huā	花	28	Mountain	shān	山
13	Bamboo	zhú	竹	29	Leaf	yè	叶
14	Wood	mù	木	30	Sun	rì	日
15	Fruit	guǒ	果	31	Sky	tiān	天
16	Person	rén	人	32	Cloud	yún	云

Figure 4 32 Chinese characters are used in the LiSCReW

Four players take turns rolling the dice and moving their playing pieces around the board. As players move around the board and land on a tile that is printed with a Chinese character, the player needs to recognise the Chinese character by matching it with 32 randomly placed face-down cue cards placed on the board within the one minute given. Once he finds the cue card, he needs

to read aloud to the other players in both the Chinese and English languages. If the answer is correct, a game coin is awarded to him. The player will miss one turn for the failed task.

RESULTS

Table 2 presents the demographic profiles. The majority (86.4%) of the respondents are female students. In terms of faculty, most respondents (45.5%) are from the Faculty of Business & Management, whereas 9.1% of respondents are from the Faculty of Information Management and Computer Science & Mathematics, respectively. With regard to learning Chinese experience, more than half of the respondents (77.3%) had experience of learning Chinese during their studies. Meanwhile, almost half of the respondents (45.5%) currently take Mandarin Level 1.

Table 2
 Demographic Profiles

Characteristics	N	Percent
<i>Gender:</i>		
Male	3	13.6
Female	19	86.4
<i>Faculty:</i>		
Accounting	5	22.7
Business & Management	10	45.5
Civil Engineering	3	13.6
Information Management	2	9.1
Computer Science & Mathematics	2	9.1
<i>Have you taken Chinese course during your study in UiTM?</i>		
Yes	17	77.3
No	5	22.7
<i>Your Current Chinese Language Level</i>		
Level 1	10	45.5
Level 2	2	9.1
Level 3	5	22.7
Not relevant	5	22.7

The effectiveness of LiSCReW board game in learning Chinese characters

As shown in Table 3, the majority of respondents believe LiSCReW is an effective educational tool for learning Chinese characters. The vast majority of respondents (90.9%) agree that after playing LiSCReW, they are more confident in their ability to recognise Chinese characters.

Approximately 68.2% say they are more confident in pronouncing Chinese characters, while 22.7% disagree. Upon checking their profile, those who disagree refers to the five respondents who never took any Chinese courses while studying at UiTM. More than half of respondents (54.6%) said they felt more confident reading Chinese characters after playing the game. Surprisingly, nearly 40.9% of respondents say the game does not meet their Chinese educational needs. Finally, almost all respondents (77.3%) agree that the Chinese characters they learned while playing LiSCReW can be applied to their Chinese test.

Table 3
Assessment of the Effectiveness of LiSCReW board game

No	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		Percentage (100%)				
1	I feel more confident in recognizing Chinese characters after playing the game.	0.0%	0.0%	0.0%	9.1%	90.9%
2	I feel more confident in pronouncing Chinese characters after playing the game.	13.6%	9.1%	0.0%	68.2%	9.1%
3	I feel more confident in reading Chinese characters after playing the game.	22.7%	0.0%	0.0%	54.6%	22.7%
4	The game met my Chinese educational needs.	36.4%	4.5%	0.0%	0	59.1%
5	I can apply the Chinese characters' knowledge to my Chinese test.	22.7%	0.0%	0.0%	45.5%	31.8%

Assessment of the LiSCReW Board Game

Table 4
Assessment of the LiSCReW board game

No	Items	Very Poor	Poor	Average	Good	Excellent
		Percentage (100%)				
1	The style/design of the game	0.0%	0.0%	4.5%	4.5%	91.0%
2	The ease of instruction / rules of the game	0.0%	0.0%	4.5%	22.7%	72.8%
3	The suitability of 32 Chinese characters chosen	0.0%	0.0%	0.0%	9.1%	90.9%
4	Does the pictures drawn resemble Chinese characters?	0.0%	0.0%	0.0%	9.1%	90.9%

According to Table 4, the majority of respondents (91%) thought the LiSCReW's overall styling/design was excellent. Approximately 73% of respondents rated the board game's ease of instruction/game rules as excellent. When asked about the suitability of the 32 Chinese characters used in the LiSCReW board game, almost all respondents (90.9%) said they were "excellent." In addition, almost all of respondents (90.9 percent) rated the pictures drawn to resemble Chinese characters an "excellent" rating, while the remainder gave it a "good" rating.

Other comments for LiSCReW

The respondents were given a space for ‘other comments’ on the questionnaire. Manual coding was conducted to identify the themes since there were only 15 respondents who provides other comments. There are five themes derived from the comments and is presented as below:

i. Enjoyment

“The game was fun and need more focus! Love it so much!”

“All the best to the team and please creates more game!”

“I had fun!! Totally help improve my Chinese, Thank you!”

“A fun game ever!”

“It’s very fun to play, very different from other games, I can learn more about Mandarin word, I love to buy it!”

“It’s such a creative idea and a fun way of learning!! Love so much!”

ii. Effectiveness of board game

“I think I can remember few characters already!”

“How I wish there will be a board game like this during my Chinese level 1”

iii. Design of the board game

“Love the design! So colorful!”

“Should introduce to the kids! Sure, they will love it!”

iv. Potential for game improvement

“Would be nice if come with audio, easy to learn by self! But I still love this game!”

“Suggest come with method to write Hanzi! Then it’s gonna be perfect!”

v. Recommendation to others

“Surely will recommend to my friends!”

“Will tell my lecturer to buy it!”

“Already snap the game and sent to my parent, asking them to purchase for my little

sister”

“Love it! I will suggest to librarian to purchase it!”

DISCUSSION

According to previous research, educational board games can increase learner engagement and make the learning process more exciting. In terms of effectiveness, our findings are similar to those of Poole et al. (2019) and Wen et al. (2020). Although our study did not yet include any empirical testing, the descriptive analysis in percentages suggests that LiSCReW is effective in assisting non-native learners to learn Chinese characters. Nonetheless, according to the findings of this study, approximately 40% of respondents stated that the board game does not meet their Chinese educational needs. As expected, some respondents will believe that the board game is unnecessary for them, because each learner has their own learning style. One possible explanation is that those who responded were solitary learners. A solitary learner is an individual who prefers to study independently. They are self-motivated, prefer to work alone, and learn best when working alone. This learning style is distinct from kinaesthetic, visual, or auditory learners, who learn best by doing, seeing, or hearing.

To increase excitement, Chen et al. (2020) suggest that the educational board game be designed to be less complex and more casual, making it easier to balance education and entertainment. Chen et al. (2020) also claimed that when the game is casual, simple to play, and the rules are simple, learners will be less distracted during study because they will not have to use as much brainpower. Furthermore, the use of colorful and appealing design in the LiSCReW board game is critical to attracting learners in this study. This is because happiness is the goal for which people persuade, according to Csikszentmihalyi (1990). When people are happy, they have a flow experience, which means that if they concentrate on the context of an activity, they will eliminate everything that has nothing to do with them. Pleasant and positive emotions will emerge as a result. Thus, LiSCReW was purposefully designed to be visually appealing and colorful to ensure that non-native learners are happy and have fun while playing. As per findings of this study, there is a flow experience because when non-native learners enjoy the process of playing, they remember everything that happens while playing, such as recognizing, reading, and writing Chinese characters. Although no empirical testing was conducted to support Csikszentmihalyi's (1990) Flow Theory or other studies linking flow experience and performance such as playing games (Engeser & Rheinberg, 2008), exercising sports (Stein et al., 1995), or making music (Wrigley & Emmerson, 2011), it can be seen in the ratings given by respondents on the effectiveness of LiSCReW in learning Chinese characters or the styling/design of the board game. Furthermore, we can see how happy people are after playing the game in the other comment sections.

Besides that, previous studies such as Sung and Wu (2011) and Yang (2018) asserted that there are many characters with different meanings but similar sounds. Moreover, some Chinese characters contain several strokes that demotivate non-native learners. To address this issue, the study purposefully designed and creatively drew a picture that resembled the characters. Noting the importance of recognizing numbers in Chinese characters, the 32 chosen Chinese characters included numbers 1 to 10. This is because numbers are used in many aspects of our daily lives.

For example, counting family members, knowing the day, date, month, year, and time, the age, telephone number, and counting money. Aside from the numbers, there are 22 other characters that are related to everyday life, such as the sun, the sky, flowers, goats, and cows. Some of these characters can be found in the Chinese Level 1 syllabus for UiTM students. As a result, learners, particularly those taking Chinese Level 1, can revise happily while playing this board game.

CONCLUSION

The LiSCReW family board game is an educational board game designed to help non-native learners learn Chinese characters in a fun and easy manner. This study discovered that LiSCReW could be an effective educational tool for learning Chinese characters. Despite the lack of empirical testing, approximately 90.9% of respondents strongly agree that playing LiSCReW has increased their confidence in recognizing Chinese characters.

This study discovered that the game flowed well and didn't require much assistance once it was completed and started. This is reflected in the ratings, with 72.8% of respondents rating the ease of use of instruction/game rules as 'excellent.' The responses were generally positive, and all respondents agreed that LiSCReW is useful for learning Chinese characters. One of the respondents stated that LiSCReW could assist her in improving her Chinese. According to her profile, she was currently enrolled in Chinese Level 2.

Some respondents said they would gladly recommend this family board game to friends, family, librarians, and lecturers. As a result, this suggests that LiSCReW would benefit from inclusion as a learning tool as part of the educational process. LiSCReW can help non-native learners learn Chinese characters in a fun and easy way, while also instilling confidence in new non-native learners.

This preliminary study was designed solely to determine whether LiSCREW is suitable for use as an educational tool when teaching and learning Chinese as a third language, with a focus on Chinese characters. This study employs non-probability sampling, a convenient sampling method that focuses solely on respondents from UiTM Johor for a one-day exhibition on December 1, 2019. Many factors, such as time constraints, noise, and waiting time for play, would have an impact on how much fun the board game would be. Furthermore, due to the small number of respondents (less than 30), statistical analyses such as the correlation between the effectiveness of board games and demographic variables are impractical. As a result, taking into account all of the aforementioned limitations, caution should be exercised in generalizing the findings. This preliminary study can be used as a foundation for large-scale empirical testing of the applicability of Flow Theory.

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About the authors

Lee Chai Chuen is a Senior Lecturer in the Akademi Pengajian Bahasa, Universiti Teknologi MARA (UiTM) Cawangan Kedah. Currently, she holds the position as the Third Language Coordinator. She graduated with a Master's degree in Linguistics from the University of Malaya. She has twenty years of experience in teaching Mandarin as a third language at UiTM. Her areas of interest and expertise include singing, drama and Chinese cultural performances. She won a Teaching Award at "Anugerah Akademik Universiti 2016" based on her creative and

innovative teaching and learning methods. Her passion, commitment, and diligence will continue to enhance non-native speakers' command of the Chinese language.

Dr Nor Azrina Mohd Yusof is a senior lecturer in the Faculty of Accountancy at Universiti Teknologi MARA Kedah Branch. She received her PhD in Accountancy and Master's in Accountancy from Universiti Teknologi MARA. Her research area of interest includes tax compliance, tax education and Chinese language education.