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Effectiveness Of Card Games in English Vocabulary Learning Among Chinese Public Primary School ESL Students

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ABSTRACT

This study investigates the effectiveness of using card games in learning English vocabulary among Malaysian ESL students at a Chinese primary public school. This research involved 27 Year 3 primary school students at the Common European Framework of Reference for Languages (CEFR) A1 level. A quantitative analysis method is utilized for data collection, and the instruments contained a pre-test and a post-test to examine this game-based learning technique. The findings illustrate that over 90% of participants' English proficiency improved. The study concluded that the card game teaching method is effective in being used as a pedagogical tool for learning English vocabulary among Chinese public primary school ESL students.

Keywords: Game-Based Learning; Card Games; ESL Students; Effectiveness

Background

People like to play; play is the human instinct (Piaget, 2013). Games are ways to play, such as video games, board games, self-created games, card games, and other games. However, learning is inevitable in one's life; hence, when the desire to play games meets the necessity of learning, the concept of game-based learning, which refers to a game design for learning, was raised (Piaget, 2013; Plass, Homer, & Kinzer, 2015). A great game must be inviting and fun and possess features like a balanced difficulty level, occasional rewards, and success after struggling to produce the largest response rate (Loftus and Loftus, 1983; Csikszentmihalyi, 1990, as cited in Plass, Homer, & Kinzer, 2015). Meanwhile, card games have been utilized as a pedagogical tool in teaching certain topics or courses such as mathematics (Singh *et al*., 2021), biology (Gutierrez, 2014), astronomy (Smith & Munro, 2009), and English language (Ratna *et al*., 2023; Lukas *et al*., 2020; Depari, Azwandi, & Syahrial, 2018; Razali *et al*., 2017; Chai & Yunus, 2021).

This study deals with the effectiveness of card games in learning vocabulary. This study would pave the way for the future establishment of in-class games in Malaysian public schools. Malaysian students seem oriented towards playing games in this era of new technologies and advancement in games as it improves their language skills (Wong & Yunus, 2021). The effectiveness of gamification in classrooms is yet to be discussed and highlighted for better reliable outcomes that would lead to some expected changes in the curricula and material design.

Limited research on using card games as educational tools exists, particularly in Malaysia. This study explores their effectiveness in teaching English vocabulary to Chinese primary school students, utilizing game-based learning theory to improve proficiency and motivation. The researcher notes that Malaysian primary school English teaching often relies on teacher-centered methods, lacking student engagement and motivation. Interaction between teachers and students is crucial for effective learning, yet current textbooks fall short in fostering it. Different teachers employ various techniques, such as visual aids, impacting students' English proficiency. However, there's a dearth of literature on game-based learning in Malaysian Chinese public primary schools. Hence, the researcher suggests implementing innovative methods like game-based learning to enhance English vocabulary acquisition. This highlights the need for more research in this area to improve English education in Malaysian primary schools. (Ganyaupfu, 2013; Teo & Wong (2000); Ahmad, Shaharim, & Abdullah, 2017).

Objectives of the Study

This research aims to achieve the following objective:

To investigate the effectiveness of using card games on learning English vocabulary among Malaysian ESL students at a Chinese primary public school.

This study is significant as it contributes to the field of English language learning and education in Chinese public primary schools. The findings of the research may provide insights into the effectiveness of card games in learning English vocabulary, which can ameliorate the development of educational policies and decision-making related to language teaching methods and materials in Malaysia. Hence, this study may benefit ESL students by helping them learn English vocabulary through a delightful study method with card games.

Literature Review

Game-Based Learning Theory

Game-based learning can be defined as a style of games with certain planned learning Game-based learning can be defined as a style of game with certain planned learning objectives (Shaffer et al., 2005, as cited in Plass, Homer, & Kinzer, 2015). In other words, it is a game designed for learning purposes. According to Zhong (2019), Piaget’s cognitive development theory is the foundation of game-based theory, as Piaget believes games are an essential component of children’s intellectual development. In Piaget’s work, Play, Dreams, and Imitation in Childhood (1962), he claims that the criteria of play are autotelic, spontaneous, pleasurable, and over-motivational. A child will automatically gain the ability to play without training, for example, by cutting vegetables into small squares when he or she eats them (Piaget, 2013). Thus, game-based learning theory is formed when it combines human nature with learning. Game-based learning, a longstanding practice, includes classics like "The Lemonade Stand Game," aiding economic education. Players act as entrepreneurs, adjusting strategies based on feedback, illustrating how games facilitate learning of complex concepts. (Aquia, 2022).

In addition, any games that fit into the game-based theory can be used as a pedagogical tool (Plass, Homer, & Kinzer, 2015). It does not matter whether it is a video game or other non-digital games like card games and board games; if it is useful for learning, it is a good game. Other scholars, such as Qian & Clark (2016), assert that game-based learning provides learners with a sense of achievement when they accomplish the defined learning outcomes through gameplay. This can be proven by the statement by Gee (2003), who asserted that games would motivate and engage players to continue learning. Game-based learning includes the incentive system in gamification to attract players and involves rules and artificial conflict to make learning more engaging (Salen & Zimmerman, 2003; Plass, Homer, & Kinzer, 2015). Game-based learning integrates educational

content into engaging games, enhancing motivation and learning. This section explores its role in ESL.

Game-Based Learning (GBL) and English as a Second Language (ESL)

Several studies have researched the relationship between game-based learning and English as a second language (ESL) learners (Liu *et al*., 2021; Rankin *et al*., 2021; Idris, Said, & Tan, 2020). Many researchers have pointed out the significance of GBL in motivating and engaging learners to learn through games with defined outcomes. Based on the outcomes of the studies reviewed up to the level of knowledge of the research and after doing a comprehensive and systematic review of previous studies, it has been found that most of those studies favored applying game-based learning to the English as a Second Language (ESL) context.

A recent study conducted by Liu *et al*. (2021) reveals that most teachers have a positive view of the games in motivating English as a Foreign Language (EFL) learners towards learning English. Similarly, another study on video games facilitating ESL students' language skills shows that the game has an impact on increasing ESL students' reading accuracy based on the comparison of the pre-test and post-test results (Rankin *et al*., 2021). Furthermore, as noted by Saha & Singh (2016), games encourage learners to participate in academic activities and create a context based on real life for them to apply English in ESL classrooms. A previous study on the effectiveness of game-based learning indicates that GBL is suitable for ESL lessons as it ameliorates both teaching and learning experiences. (Idris, Said, & Tan, 2020). Kahoot!, a kind of game-based learning platform, has been used during Idris, Said, & Tan's (2020) research to investigate how the game strengthens ESL students' present-tense verb learning. The result of the post-test is surprising, as it shows significant improvement when compared to the pre-test result. Likewise, several studies on card games also show an uplift in post-test scores after applying the theory of game-based learning. This will be further elaborated in Section 2.3, which is related to card games and vocabulary learning.

The discussion above illustrates the effectiveness of game-based learning in ESL classrooms. In short, game-based learning has been used in the above-highlighted studies among ESL learners as it could enhance their English proficiency.

Card Games in Vocabulary Learning

Many scholars have argued that card games assist ESL learners in English vocabulary learning noticeably in ESL classrooms (Lukas *et al*., 2020; Depari, Azwandi, & Syahrial, 2018; Razali *et al*., 2017; Chai & Yunus, 2021). Apart from this, card games can also be used in various subjects; they are not solely limited to English vocabulary learning. Gutierrez (2014) applied a card game as supplementary teaching material in her study to test the usefulness of it in reinforcing biological terminology. As Gutierrez (2014) proclaimed, students' performance in learning vocabulary in biology class can be boosted further using a student-centered approach like card games. Hence, card games are applicable for vocabulary learning.

A few previous studies have emphasized card games and their effectiveness in vocabulary learning. Recently, Lukas *et al*. (2020) examined the use of the U-NO-ME card game on vocabulary enhancement in primary school ESL classrooms. In that research, 52 Primary One students were chosen to play the specialized card game, which consists of 20 words about animals, and the result shows a positive increment in average score from 31.3% in the pre-test to 76.5% in the post-test (Lukas *et al*., 2020). This statistic demonstrates that the card game used by the research team has a huge influence on the students' vocabulary improvement. Besides, a preliminary study conducted by Razali *et al*. (2017) declared that card games can enhance vocabulary retention. After playing the game, the results indicate students can recall more vocabulary than the initial time after the same theme lesson (Razali *et al*., 2017). Students are more likely to learn vocabulary through card games instead of traditional teaching methods.

All in all, based on the abovementioned research data and analysis, card games can reinforce English vocabulary learning while at the same time deepening learners' motivation toward learning English.

Methods

Research Design

A quantitative quasi-experimental method assessed card games' impact on English vocabulary learning (Kim & Steiner, 2016) with 27 Year 3 Chinese ESL students. Pre-test and post-test data were collected, comparing results after game-based learning sessions using self-designed educational card games. This method is suitable for evaluating treatment effects in educational research, providing insights into effective pedagogical tools for language learning.

Sampling Methods

A non-random sampling method was used to select 30 Year 3 Chinese ESL students from SJK(C) Bukit Siput in Malaysia. Variables like age, gender, and language proficiency were considered. The study aimed to reflect the effectiveness of card games in English vocabulary learning across similar schools sharing the curriculum.

Participants

The research initially involved 30 participants, evenly split between genders. However, during the post-test, 3 participants were absent, leaving 27 for evaluation. All participants were at least 9 years old and beginners in English, assessed at CEFR A1 level according to the Get Smart 3 Plus English textbook (Mitchell & Malkogianni, 2018).

Table 1: Number of Participants (n)

Test	Participants	Male	Female
Pre-Test	30	15	15
Post-Test	27	14	13

Self-Designed Card Game

A set of card games has been specifically designed for this research. The researcher collected all the vocabulary related to food from Years 1 to 3 in the English textbooks Superminds Students Book 1 and Get Smart Plus 3 to make the card game. Besides, for the purpose of coherence and familiarization, as well as the suggestion from the interview, an additional vocabulary pack has been added to the card games. The researcher named the self-designed card games Recipe! because the core of the game is to complete recipes and win the game. Students can learn vocabulary throughout the process of playing card games.

Information on the Recipe! Card Game

Table 2 (A): Information on the Recipe! Card Game

Card count:	80
Player per game:	minimum 2, maximum 6
Time per game:	10-15 minutes
Age:	>7
Recipe cards:	24
Ingredient cards:	56 (with 14 power cards)

Table 2 (A) displays the basic information for the Recipe! Card game. A set of Recipe! Cards consists of 80 vocabulary cards, each different from the others. The game requires at least 2 players and at most 6 players per game, which means it is flexible for the user to adjust the number of players. Furthermore, each game roughly takes about 10 to 15 minutes to complete; it can be played during the class break, the rest time, or whenever the users are free. The suggested age to play the game is above 7 years old, as this card game covers the vocabulary regarding food from the age of 7 to 9.

Among the cards, 63 vocabularies are considered “Original,” as they were extracted from both Superminds Students Book 1 and Get Smart Plus 3 textbooks. The remaining 17 vocabularies are “Additional” content to complete the game; for example, the word “Lemonade” is in the syllabus, but “Lemon” is not included. To let students know that “Lemonade” is made from "Lemon," the author added the corresponding card “Lemon” to the game.

Table 2 (B): Types of Recipe Cards

Ingredient Card [Original]	Ingredient Card [Additional]	Power Card [Effect]	Recipe Card
			

Figure 1: Types of Recipe Cards

Every design has a meaning. Regarding Table 2 (B) and Figure 1, there are three major types of cards in Recipe! the ingredient card, the power card, and the recipe card. The picture of a food is presented in the middle of each card, along with a vocabulary word underneath it. The border of the cards represents their group, e.g., fruit, dessert, and recipe, which is shown in the top left corner. On the top right, there is an icon that represents the group. For the additional cards, there is a mark of +++ at the right bottom, while for the power cards, a pink star is added under the icon, and its effect is mentioned on the card too. For the recipe card, the ingredients needed to form a recipe are stated beneath the vocabulary. The numbers at the bottom and middle of recipe cards indicate their points. A 2-point card needed two ingredients, a 3-point card required three ingredients, and four ingredients for a 5-point card. A national flag is included if the dish is a national food.

Gameplay

There are a few ways to play the Recipe! Card game. In this study, the researcher mainly used classic gameplay to conduct the treatment.

Classic Game

Winning Condition: Match the recipes with the corresponding ingredients to win!

Preparation phase

Each player draws three recipe cards in the sequence of one 2-point card, one 3-point card, and one 5-point card, for a total of 10 points. Next, each player draws four ingredient cards as the starting cards and then continues to the next phase. Players must face up to their recipe cards and ingredient cards.

Game Phase
Each round is divided into three steps. In the first round, each player must draw two cards from their hand. The second step is to try to match the recipe. After that, the last step is to discard the extra card to the discard pile if the hand cards are more than 4. The maximum number of hand cards at the end of each round is four. The researcher recommended players mention the vocabulary on the cards every time they draw and discard them in order to enhance their memory and learn through games. The first player to complete all three recipes wins the game; other players may choose to continue and determine who the second or third place winner is.

Classic Game: Extended Point
The same rules apply to the Classic Gameplay; however, instead of 10 points, players can customize their own game by setting different points for the game. As an example, as long as all of them reach a consensus, they can set the point target as 15, 20, or any other reasonable point.

Speed Gameplay
It follows almost the same rules as the Classic Gameplay, but this time, all the recipes are open to all players! Players are required to complete as many recipes as possible within the given time. Players also start with four starting cards in the first round, then follow the steps of the game just like in classic.

Recipe Forming Gameplay
The instructor can ask students to prepare a dish, a cake, or even a healthy meal set. Students will choose the ingredients from the card deck, form the meals, and describe why they have selected these ingredients for their dishes.

Apply as Flash Cards
All 80 cards are in the Recipe! Card games have the features of flashcards, which are a kind of card with a vocabulary and a picture of it so this card game can be applied as flashcard in teaching the students vocabulary.

Instruments
In this study, GBL theory has heavily influenced the formation of all instruments. A pre-test and post-test are conducted to examine the effectiveness before and after applying card games as teaching material in the study group, which corresponds to the research question.

Pre-Test & Post-Test
The pre-test and post-test test papers adopted the pattern from a research study done by Lukas *et al*. (2020). Its effectiveness has been examined by scholars, while its difficulty, which is based on the class syllabus, has been reviewed by academic staff from the chosen primary school. A total of 20 vocabularies have been selected in the pre-test; 10 vocabularies are from the syllabus of Years 1 and 2 Super mind Students Book 1, and the remaining half are from Year 3 Get Smart 3 Plus. The questions are divided into four sections, and each section contains five questions. The question types include arranging the scattered letters, matching the picture with the correct vocabulary, spelling the right vocabulary, and filling in the blank. Based on the answers of the participants, the researcher knows their English level and whether they can recognize the given vocabulary. The post-test paper adopts the same questions as the pre-test. Thus, the results of the pre-test and post-test are calculated and compared to test the improvement of students.

Data Collection Procedures
In eight English class sessions, a researcher conducted an experiment. A pre-test was given to 30 students, followed by three sessions of card game treatment. Five groups of six students each played Recipe! Cards for a week. Afterward, the remaining students received three treatment sessions, with a post-test in the final session. Pre-test and post-test results were analyzed for the study group.

Data Analysis Procedures

Test papers underwent validity review, results were converted to percentages, and improvement calculated. Tables, charts, and IBM SPSS were used to evaluate Recipe! Card treatment effectiveness.

Results

Quantitative Analysis

In the quantitative analysis, the results of the pre-test and post-test are presented in detail, along with an analysis of results based on individual and paired sample t-tests. The collected data has been displayed and classified in tables, charts, and figures.

Pre-Test and Post-Test

The collected results of the pre-test and the post-test have been computed and placed in Tables 4 (A) and 4 (B). Table 4 (A) shows the mean of 27 students' actual scores, while Table 4 (B) is the percentage converted version of their scores. This research aims to answer the research question: "What is the effect of using card games on learning English vocabulary among Malaysian ESL students at a Chinese primary public school?"

Table 4(A): Results of Pre-Test and Post-Test

Number of Students	Pre-Test	Post-Test	Difference (Post – Pre)
27	8.37	12.67	4.30

Table 4(B): Result of Pre-Test and Post-Test in Percentage

Number of Students	Pre-Test (%)	Post-Test (%)	Difference (%) Post-Pre
27	41.85%	63.35%	21.50%

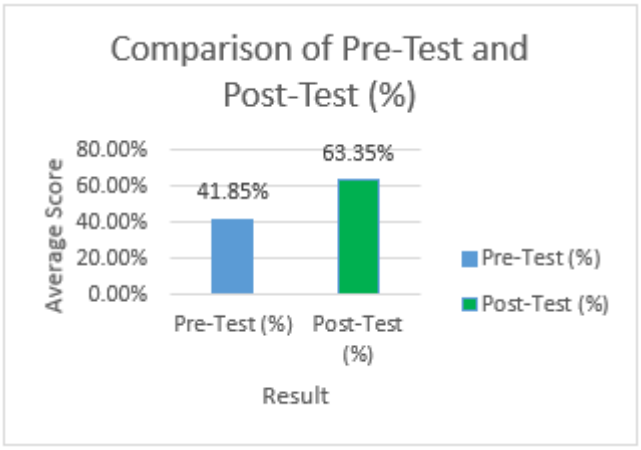

Figure 2: Comparison of the Pre-Test and Post-Test (%) Bar Chart

From the table, the mean score for 27 students in the pre-test is 8.37 out of 20 marks. After the treatment, the post-test result is 12.67, an increase of 4.30 marks. When converting into percentages, the result shows a significant improvement of 21.50% from 41.85% in the pre-test to 63.35% in the post-test. Figure 2 demonstrates the difference between pre-test and post-test scores in percentage using a bar chart.

Participants' Test Result

The researcher has listed the test results for each participant along with a line graph, as follows:

Table 5: Individual's Pre-test and Post-test Score

Student	Pre-Test Score	Post-Test Score	Score Difference (Post - Pre)

1	2	3	1
2	3	6	3
3	4	3	-1
4	4	9	5
5	5	7	2
6	5	8	3
7	5	9	4
8	5	13	8
9	5	14	9
10	5	14	9
11	6	9	3
12	6	13	7
13	8	12	4
14	8	15	7
15	9	10	1
16	9	13	4
17	10	19	9
18	11	11	0
19	11	14	3
20	11	17	6
21	12	20	8
22	13	15	2
23	13	15	2
24	13	16	3
25	13	19	6
26	14	18	4
27	16	20	4

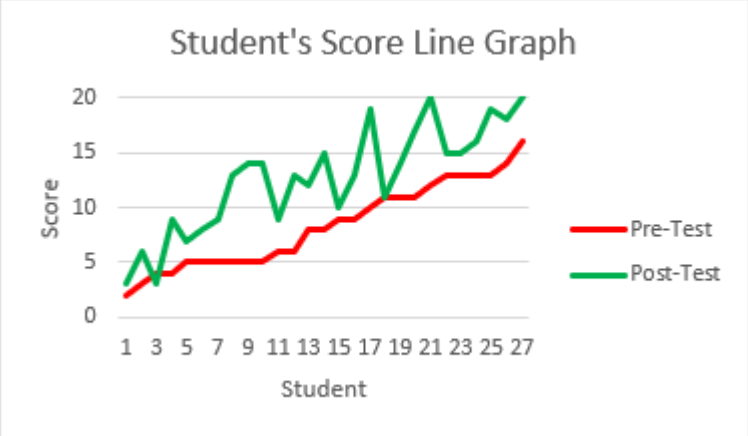

Figure 3: Student's Score Line Graph

Table 5 enumerates the pre-test and post-test results for all 27 students in this research. 25 out of 27 of them have improved during treatment, with various degrees of improvement. Students 9, 10, and 17 have the highest score differences among the study group, with a difference of 9 marks in the post-test when compared to the pre-test. Before the treatment, the highest score was 16, contributed by Student 27, while the second and third highest scores were 14 by Student 26 and 13 by Students 22, 23, 24, and 25, respectively. After six sessions of treatment, two students scored the highest 20 marks, which is the full mark of the test, and the second and third highest scores are 19 and 18, respectively. Figure 3 shows a significant shift from the pre-test score (red line) to the post-test score (green line). Almost all students gained a higher score on the post-test, except students 3 and 18.

Paired Sample T-test

To determine whether of Recipe! card game genuinely facilitates learning English vocabulary among Malaysian ESL students, the researcher has compared the pre-test and post-test with a pair sample t-test to prove its effectiveness with the aid of IBM SPSS Statistics version 26.

Table 6(A): Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	**Pre-Test**	8.3704	27	3.92378	0.75513
	Post-Test	12.6667	27	4.81983	0.92758

Table 6(B): Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	**Pre-Test Post-Test**	-4.29630	2.82591	0.54385	-5.41419	-3.17840	-7.900	26	0.000

Based on Table 6(A), the statistics of the pre-test are (mean = 8.3704, s.d. = 3.92378), while the statistics of the post-test are (mean = 12.6667, s.d. = 4.81983). As for Table 6(B), the value of the t score is -7.900; with a significance level of 0.05, the value of p is <0.00001. Hence, the result is significant at p <0.05. These statistics justify that students' vocabulary acquisition has improved throughout the Recipe! Card game treatment.

Discussion & Conclusion

This study aims to evaluate the card games' effectiveness in improving English vocabulary learning among Chinese public primary school ESL students. The result of the post-test shows a significant improvement of 21.50% compared to the pre-test, which indicates the effectiveness of card games in learning English vocabulary. Over 90% of students achieve improvements after the six sessions of treatment. The result of the paired t-test also displays the significance level at p <0.05, making the results valid. In some other similar studies on card games and learning English, Lukas *et al*. (2020) report a positive increment in the score percentage from all four primary schools with a significance level of p <0.001; the study of Chai & Yunus (2021) says the post-test has higher performance at the 0.05 level of significance; another study from Razali *et al*. (2017) also displays a significant increase in the score in the post-test at p <0.05. All of the similar studies regarding card games and vocabulary learning draw a positive conclusion on the effectiveness of card games after the treatment. Thus, using card games to learn English vocabulary is effective because the results have improved significantly based on the statistics from the study.

The outcomes of this study might contribute to the educational circles and academia in Malaysia on the effectiveness of game-based learning theory in education. For educational circles, this study directly serves teachers in Chinese public primary schools; it provides them with insight into the utilization of card games in the English classroom. Teachers will have an incisive perception of the GBL theory and how to adapt it in their class sessions. With the aid of GBL theory, students are more likely to be motivated and enjoy learning vocabulary and having games at the same time. When their learning interest is raised by games, surely their English proficiency will improve more than ever before. Hence, this study demonstrates the effectiveness and practicality of using card games to learn English vocabulary. Furthermore, this research is not restricted to Chinese public primary schools; the model of this research can also be replicated in other schools from different places, even outside of Malaysia.

This study addresses the lack of research on card games as educational tools, paving the way for future exploration. The researcher anticipates Game-Based Learning (GBL) to gain traction in educational discourse. In Malaysia and globally, a strong foundation in English is essential. Using card games for teaching validates Game-Based Learning (GBL) theory's efficacy. The study's outcomes align with its objectives, reflecting the rapidly changing 21st-century landscape. The researcher predicts GBL's imminent prominence in language teaching and beyond, inviting future

educators to embrace this learning revolution. The aim is for children to seamlessly integrate play and learning, departing from the dichotomy of the past.

Declarations

Ethics Approval and Consent to Participate: All the participants and school had been well informed. This research has been approved by Xiamen University Malaysia and SJK (C) Bukit Siput.

Conflict of Interest: Not applicable.

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