

A Comparison of the Effect of Game-Based and Story-Telling Learning Methods on Chinese Academic Achievement and Attitude Toward Learning Chinese as a Foreign Language in Thailand-Based Kindergarten 1 Students

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Abstract

This quasi-experimental quantitative study was aimed at comparing the Chinese academic achievement and attitude toward learning Chinese as a foreign language (CFL) among Kindergarten 1 (K1) students under the game-based (as intervention) and story-telling (as traditional instruction) learning methods at an international school in Thailand. A 3-week intervention was implemented on a convenience sample of two K1 classes, enrolled at the target school during the academic year 2022-2023. For the data collection, the Chinese monthly test for November 2022, and the Attitude Toward Learning Chinese as a Foreign Language Questionnaire (adapted from Gardner, 2010), were used. Data analysis was conducted using descriptive statistics (i.e., frequencies, percentages, means and standard deviations) and comparative analysis (using independent samples *t*-tests) on the collected data. From the data analysis, it was found that:

1. K1 students had an average gain of 5.18 ± 2.68 points in Chinese academic achievement after learning under the game-based learning method;
2. K1 students had an average gain of 4.28 ± 2.40 points in Chinese academic achievement after learning under the story-telling learning method;
3. a larger gain in attitude toward learning CFL was observed for K1 students after studying under the game-based learning method (0.38 ± 0.29) than for those under story-telling learning method (0.15 ± 0.34);
4. no significant difference ($\alpha = .05$) was found in the gain in Chinese academic achievement between the students learning under the game-based learning method and those learning under story-telling learning method; and
5. there was a significant difference ($\alpha = .05$) in the gain in attitude toward learning CFL between the students using game-based and story-telling learning methods.

Keywords: Academic Achievement; Attitude Toward Language Learning; Chinese as a Foreign Language; Game-Based Learning Method; Story-Telling Learning Method



Introduction

In Thailand, schools administered by the Office of the Basic Education Commission under the Ministry of Education, are prescribed to teach English compulsorily for the entire basic education, and 11 languages as elective subjects, being one of them Chinese (Ministry of Education, 2008). In response to the growing influence of China, Chinese has become the most popular foreign language among Thai students, and hence it has been included as a school subject in most Thai schools (The Nation Thailand, 2012). However, Thai students' Chinese academic achievement has been unsatisfactory at school and on the national Chinese examinations (Kanoksilpatham, 2011). Then, it is essential to improve Thai students' Chinese academic achievement, especially at kindergarten age, when they are in the most critical period of speech plasticity (Wang & Tang, 2019).

Foreign language learners can benefit from a positive learning attitude, since this may lead to an increase in motivation for learning the foreign language and, most likely, to a higher academic achievement and proficiency (Brown, 2002; Gardner, 2010).

The game-based and the story-telling learning methods have both been reported to be effective in increasing young children's academic achievement and attitude toward language learning (Landers, 2014; Sulzby, 1985). The psychology of motivation involved in game-based learning enables children to engage with learning material and hands-on learning experiences in a fun, structured and dynamic way, while enhancing collaboration, communication skills, creativity, critical thinking, motivation and academic achievement (Luo, 2013; Wen, 2018). The story-telling learning method refers to using stories and dialogic instruction to provide learners with linguistically, psychologically, cognitively, socially and culturally engaging materials in a natural and playful knowledge delivery, in order to stimulate learners' participation, enjoyment and pleasure, which has a positive impact on their foreign language academic performance (Fu, 2018; Hartono et al., 2021).

The first author, who is a Chinese language teacher in Kindergarten 1 (K1) at an international school in Thailand, has informally observed that many K1 students do not actively participate in the Chinese class activities, and seem to have no interest in speaking Chinese, as they prefer to speak in English or Thai. These actions seem to indicate that K1 students hold negative attitudes toward learning Chinese as a foreign language, an issue that have been reported in young Thai learners (Peng, 2020), and that may lead to a low academic achievement (Brown, 2002; Gardner, 2010, Peng, 2020).

Thus, with these concerns in mind, the researchers decided to design and conduct a quasi-experimental study to compare the effect of game-based and story-telling learning methods on the Chinese academic achievement and attitude toward learning Chinese as a foreign language (CFL) held by K1 students at an international school in Thailand.



Research Objectives

The following are the research objectives developed to guide this study.

1. To determine the levels of K1 students' Chinese academic achievement before and after learning under game-based method at an international school in Thailand.
2. To determine the levels of K1 students' Chinese academic achievement before and after learning under story-telling method at an international school in Thailand.
3. To determine the levels of K1 students' attitudes toward learning CFL before and after learning under game-based method at an international school in Thailand.
4. To determine the levels of K1 students' attitudes toward learning CFL before and after learning under story-telling method at an international school in Thailand.
5. To determine whether there is a significant difference in the gain in Chinese academic achievement between K1 students learning under game-based and story-telling learning methods at an international school in Thailand.
6. To determine whether there is a significant difference in the gain in attitude toward learning CFL between K1 students learning under game-based and story-telling learning methods at an international school in Thailand.

Theories and Literature Review

Theoretical Framework

This study was conducted based on the emergent literacy theory (Teale & Sulzby, 1986), and the theory of gamified learning (Landers, 2014).

Emergent Literacy Theory. This theory (Teale & Sulzby, 1986) explains how children develop listening, speaking, reading and writing skills before they receive formal education, from their interaction with significant adults and their active participation in the world around them. Children's written language-like story-telling is categorized as reading and story-telling mixed (i.e., telling a story in conversational register at times, and at other times using a more formal written register, "reading" mostly looking at pictures); reading similar-to-original story (i.e., the written or pictorial system of the book is more intensively used and dominates the pretend reading); and reading verbatim-like story (i.e., attempting to recreate partial or whole stories almost verbatim from pictures and memory).

Theory of Gamified Learning. This theory (Landers, 2014) describes how the use of game characteristics (D) in a gamified instructional context (A) influences students' learning-related behaviors or attitudes (C), which in turn will have an impact on learning outcomes (B). According to this theory, game elements can affect learning through two processes: direct mediating processes (i.e., $D \rightarrow C \rightarrow B$ and $A \rightarrow C \rightarrow B$), and an indirect moderating process (i.e., the influence of C on $A \rightarrow B$; see Figure 1).

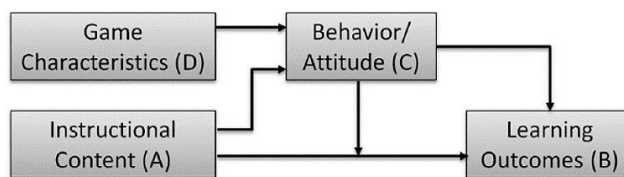


Figure 1 Theory of Gamified Learning (Landers, 2014)

Review of Relevant Studies

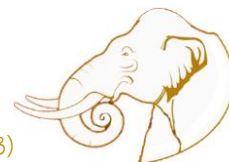
In this section, some relevant previous studies are reviewed and summarized.

Fu (2018) conducted a case study about the effect of the digital story-telling (DST) approach on the attitude toward Chinese language lesson held by a convenience sample of 32 primary school students, aged 11 to 12, at a school in New South Wales, Australia. After using the DST approach weekly in 45-minute lessons over a school term (i.e., 10 weeks), it was found that all 32 participants showed a more positive attitude toward their weekly Chinese language lesson, and toward actively participating in the learning process.

Hartono et al. (2021) conducted quasi-experimental study on 41 Grade 8 students at a junior high school in Jambi, Indonesia, to examine the effect of story-telling learning method on their English-speaking achievement. The students were randomly assigned to the experimental ($n = 21$) and control ($n = 20$) groups. The level of English-speaking achievement of the experimental group went from weak before using the story-telling method, to very good after using it. For the control group, the level of English-speaking achievement went from weak before the experiment, to fair after it. Also, a significant difference in English-speaking achievement was found between the students learning English using story-telling and those using a traditional approach, $t(39) = 17.24, p < .001$.

Peng (2020) conducted a quasi-experimental study in two Primary 1 classes at an international school in Thailand, to compare the effect of game-based and traditional learning methods on students' attitude toward Chinese language class. The game-based learning method was implemented with the experimental group ($n = 24$) by using board and computer games to review vocabulary and Pinyin, while the control group ($n = 25$) was taught the same content without using games. The intervention lasted three weeks (1.5 hours each weekday). It was found that the level of attitude toward Chinese language class held by the experimental group went from a negative level before using the game-based learning method, to a neutral level after using it, while the level of attitude toward Chinese language class held by the control group was consistently negative before and after the intervention. Also, a significant difference in attitude toward Chinese language class was found between students learning Chinese using the game-based learning method and those learning Chinese under the traditional learning method, $t(47) = 3.78, p = .001$.

Wen (2018) studied the effect of using the game-based learning method on the Chinese character learning achievement and collaborative learning quality of Singaporean



Grade 1 students. A 5-month intervention was conducted. The experimental group ($n = 24$) was taught using the game-based learning method, using augmented reality-based Chinese characters (ARC) games, while the control group ($n = 25$) was taught without ARC games. A significant gain in achievement of 8.61 points, in Chinese orthographic knowledge and awareness, was found in the experimental group after the intervention, while the control group experienced a significant decrease in achievement of 5.43 points. The experimental group was found to show more enjoyment and engagement in Chinese language class when ARC games were used, which indicates a very positive attitude toward Chinese language class after using ARC games (Gardner, 2010).

Conceptual Framework

Figure 2 shows the hypothesized interaction between the independent variable (i.e., the learning method) and dependent variables (i.e., Chinese academic achievement and attitude toward learning CFL) addressed in this quasi-experimental study.

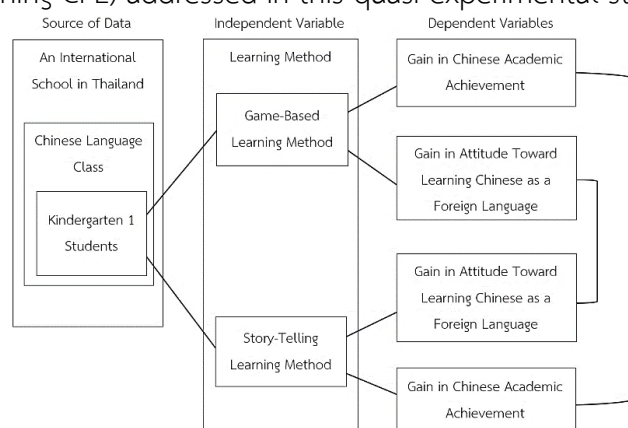


Figure 2 Conceptual Framework of the Current Study

Research Methodology

In this section, the main aspects of the research methodology are described.

1. Research Design

The study purpose was to determine whether there was a significant difference in K1 students' Chinese academic achievement and attitude toward learning CFL (serving as dependent variables) according to the learning method (serving as independent variable), namely game-based and story-telling methods, at an international school in Thailand. For that purpose, a quantitative, quasi-experimental research design was used. A 3-week intervention was planned, from November 10-25, 2022, with 12 class sessions of 40 minutes each, implemented by the first author. The topics taught during the intervention were Emotions and Hobbies, which are traditionally taught using a story-telling approach.



2. Population and Sample

For this study, a convenience sample of two out of four K1 classes at the target school were chosen, both being taught Chinese by the first author during the academic year 2022-2023. The K1 Class 1, with 17 students, was randomly assigned as the experimental group (to be taught under game-based method), while K1 Class 3, with 18 students, was assigned as the control group (to be taught under story-telling method).

3. Research Instruments

This study was based on the administration of the Chinese Monthly Test for K1 students, and the Attitude Toward Learning Chinese as a Foreign Language Questionnaire.

1) Chinese Monthly Test for Kindergarten 1 Students. This 12-question instrument, designed by the first author, had a 4-question listening section, a 4-question speaking section, and a 4-question Chinese character writing section (see Figure 3 for sample items). Chinese academic achievement scores were graded on a scale from 0 to 20 as follows: exceed expectations (18-20); meet expectations (14-17); and need improvement (0-13).

一. 听力 Listening (2 points each, 8 points in total)

听老师读词语并选出正确的图片。 Listen and circle the correct picture.

1. 高兴 Happy

二. 口语 Speaking (2 points each, 8 points in total)

看图回答问题。

Answer the questions according to the pictures.

1. 你喜欢做什么？
What do you like to do?

2. 他在做什么？
What is she/he doing? (The teacher can point anyone in the picture)

三. 书写 Writing (1 point each, 4 points in total)

请选择与图片匹配的汉字, 并写在对应的田字格里。

Choose the character that matches the picture and write it twice in the given boxes.

大

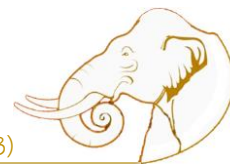
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Figure 3 Sample Items From the Chinese Monthly Test Used in the Current Study

2) Attitude Toward Learning Chinese as a Foreign Language Questionnaire (ATLCFLQ). This 10-item tool (see Table 1) was developed from the positively-worded items in two attitudinal subscales of the Attitude/Motivation Test Battery (AMTB, Gardner, 2010): language teacher evaluation and language course evaluation. Due to the participants' age, the items were given a 3-point rating scale with smiley faces (1 = ☹ = *disagree*, 2 = 😐 = *neither agree nor disagree*, 3 = 😊 = *agree*). The mean scores from the scale ratings were interpreted using a continuum from 1.00 (negative attitude) to 3.00 (positive attitude).

**Table 1** Items in the Attitude Toward Learning Chinese as a Foreign Language Questionnaire

Item No.	Item statement
1	I look forward to going to class because my Chinese language teacher is so good
2	My Chinese language teacher is better than any of my other teachers
3	My Chinese language teacher has a dynamic and interesting teaching style
4	My Chinese language teacher is a great source of inspiration to me
5	I really like my Chinese language teacher
6	I would rather spend more time in my Chinese language class and less in other classes
7	I enjoy the activities of our Chinese language class much more than those of my other classes
8	I like my Chinese language class so much; I look forward to studying more Chinese in the future
9	I look forward to the time I spend in Chinese language class
10	Chinese language is one of my favorite courses

4. Data Collection

The data were collected from the experimental and control groups as follows:

1) The Chinese Monthly Test for November 2022 was administered to both groups by the first author, as pre- and post-test, on November 8 and 28, 2022, respectively. All participants completed the pre- and post-tests, yielding a response rate of 100%.

2) The ATLCFLQ was given to both groups, as pre- and post-test, on November 9 and 29, 2022, respectively, by the first author, who called the students individually to a private area of the classroom. The students not being tested were with the teaching assistant. The first author, who prepared emoticon flashcards with a different smiley face (i.e., 😞 😊 😄), read each item to the students, either in English (to foreign students) or Thai (to Thai students), and asked them to select the flashcard that better reflected their answer. Then, the first author wrote down the answers given by each student. All students completed both administrations of the ATLCFLQ, yielding a response rate of 100%.

5. Data Analysis

The quantitative data collected for this study were analyzed by using descriptive statistics (i.e., frequencies, percentages, means and standard deviations) and comparative analysis (i.e., independent samples *t*-tests), by means of a statistical software package.

6. Research Validity and Reliability

1) Chinese Monthly Test. The first author developed this instrument, which was assessed and reviewed by three K1 Chinese language teachers (all of them native Chinese speakers with a rich Chinese language teaching experience), who agreed 100% agreed on the content and construct validity of the test. The test structure was the same being used in past monthly and final tests for K1 at the target school. Then, understanding reliability as trustworthiness (Merriam, 2009), this test format and structure was considered reliable.

2) Attitude Toward Learning Chinese as a Foreign Language Questionnaire (ATLCFLQ). Gardner (2010) ensured the construct and content validity of the AMTB items by consulting with foreign language teachers and conducting pilot studies. Moreover, the ATLCFLQ items



were translated from English into Thai by the first author, and translation validity was assessed and confirmed by three Thai language teachers from the target school, all fluent in English and with at least seven years of kindergarten teaching experience. Reliability analysis for the administrations of the ATLCFLQ resulted in Cronbach's alphas of .74 and .77 before and after the intervention, respectively, indicating an acceptable reliability level.

Research Results

The main study results are presented in detail, organized by research objectives.

1. Results from Research Objective 1

Table 2 displays main descriptive statistics for the participants' Chinese academic achievement before and after being taught under the game-based method.

Table 2 Frequency Distribution, Overall Mean Scores, Standard Deviations, and Interpretations of Kindergarten 1 Students' Chinese Academic Achievement Before and After Learning Under the Game-Based Method

Chinese academic achievement interpretation	Score range	Before learning under game-based method		After learning under game-based method	
		<i>f</i>	%	<i>f</i>	%
Exceeds expectations	18-20	0	0	11	64.7
Meets expectations	14-17	6	35.3	2	11.8
Needs improvement	0-13	11	64.7	4	23.5
Descriptive statistics					
Minimum score		2		8	
Maximum score		17		20	
<i>M</i>		11.35 (Needs improvement)		16.53 (Meets expectations)	
<i>SD</i>		4.82		4.46	

Note. Mean score interpretation is shown within parentheses.

2. Results from Research Objective 2

Table 3 displays main descriptive statistics for the participants' Chinese academic achievement before and after learning under the story-telling learning method.

Table 3 Frequency Distribution, Overall Mean Scores, Standard Deviations, and Interpretations of Kindergarten 1 Students' Chinese Academic Achievement Before and After Learning Under the Story-Telling Method

Chinese academic achievement interpretation	Score range	Before learning under story-telling method		After learning under story-telling method	
		<i>f</i>	%	<i>f</i>	%
Exceeds expectations	18-20	4	22.2	13	72.2
Meets expectations	14-17	6	33.3	4	22.2
Needs improvement	0-13	8	44.5	1	5.6
Descriptive statistics					
Minimum score		8		11	
Maximum score		19		20	
<i>M</i>		13.89 (Meets expectations)		18.17 (Exceeds expectations)	
<i>SD</i>		3.77		2.64	

Note. Mean score interpretation is shown within parentheses.



3. Results from Research Objective 3

Table 4 displays main descriptive statistics for the participants' attitudes toward learning CFL before and after being taught under the game-based method.

Table 4 Overall Mean Scores, Standard Deviations and Interpretations of K1 Students' Attitude Toward Learning CFL Before and After Using the Game-Based Method

Experimental stage	<i>N</i>	<i>M</i>	<i>SD</i>	Interpretation
Before the experiment	17	2.49	0.76	Moderate
After the experiment	17	2.87	0.42	Positive

4. Results from Research Objective 4

Table 5 displays main descriptive statistics for the participants' attitudes toward learning CFL before and after being taught under the story-telling learning method.

Table 5 Overall Mean Scores, Standard Deviations and Interpretations of K1 Students' Attitude Toward Learning CFL Before and After Using the Story-Telling Method

Experimental stage	<i>N</i>	<i>M</i>	<i>SD</i>	Interpretation
Before the experiment	18	2.67	0.65	Positive
After the experiment	18	2.82	0.47	Positive

5. Results from Research Objective 5

A comparison of the gain in Chinese academic achievement between participants under the game-based and story-telling learning methods is shown in Table 6.

Table 6 Comparative Analysis Results of the Kindergarten 1 Students' Gain in Chinese Academic Achievement Between the Experimental and Control Groups

Group	<i>N</i>	<i>M</i> _{before} (<i>SD</i> _{before})	<i>M</i> _{after} (<i>SD</i> _{after})	<i>M</i> _{gain} (<i>SD</i> _{gain})	<i>df</i>	<i>t</i>	<i>p</i>
Experimental group (Game-based learning method)	17	11.35 (4.82)	16.53 (4.46)	5.18 (2.68)	33	1.05	.302
Control group (Story-telling learning method)	18	13.89 (3.77)	18.17 (2.64)	4.28 (2.40)			

Note. Significance level was set at $\alpha = .05$ (two-tailed).

6. Results from Research Objective 6

A comparison of the gain in attitude toward learning CFL between participants under the game-based and story-telling learning methods is reported in Table 7.

Table 7 Comparative Analysis Results of the K1 Students' Gain in Attitude Toward Learning CFL Between the Experimental and Control Groups

Group	<i>N</i>	<i>M</i> _{before} (<i>SD</i> _{before})	<i>M</i> _{after} (<i>SD</i> _{after})	<i>M</i> _{gain} (<i>SD</i> _{gain})	<i>df</i>	<i>t</i>	<i>p</i>
Experimental group (Game-based learning method)	17	2.49 (0.76)	2.87 (0.42)	.38 (0.29)	33	2.16	.038*
Control group (Story-telling learning method)	18	2.67 (0.65)	2.82 (0.47)	.15 (0.34)			

* denotes a significant relationship (significance level set at $\alpha = .05$, two-tailed).



Discussion

A discussion of the study results is provided here, and organized by research objective.

1. In relation to Research Objective 1, the study results revealed that the level of K1 students' Chinese academic achievement at the target international school went from needing improvement before learning under the game-based method, to meeting expectations after it. These results are similar to Wen (2018), who found a significant gain in achievement of 8.61 points, in Chinese orthographic knowledge and awareness, in a group of Grade 1 Singaporean students, before and after using augmented reality-based Chinese character games. This gain in academic achievement could be due to game elements positively affecting learning outcomes, by giving students richer and more vivid contexts than those found in the traditional teaching (Landers, 2014; Peng, 2020).

2. In relation to Research Objective 2, the study results revealed that the level of K1 students' Chinese academic achievement at the target school went from meeting expectations before learning under the story-telling method, to exceeding expectations after it. This is in line with Hartono et al. (2021), who found that the level of English-speaking skill achievement of 21 Grade 8 Indonesian students went from weak before using the story-telling method, to very good after it. The reason for this gain in Chinese academic achievement might be the use of stories providing learners with a creative knowledge delivery that effectively stimulated their literacy skills (Fu, 2018; Sulzby, 1985).

3. In relation to Research Objective 3, the study results revealed that the level of K1 students' attitudes toward learning CFL at the target school went from moderate to positive before and after learning under the game-based method. This result is in line with Peng (2020), who found that the level of attitude toward Chinese language class of 24 Thai Primary 1 students went from negative to neutral before and after using the game-based method. The reason for this gain in attitude in the experimental group could be that the gaming environment enabled children to engage in learning in a fun and dynamic way, activating the classroom atmosphere and their enthusiasm (Luo, 2013; Wen, 2018).

4. In relation to Research Objective 4, the results revealed that the level of K1 students' attitudes toward learning CFL at the target school was positive before and after using story-telling. This is not in line with Fu (2018), who found a more positive attitude toward Chinese language in 32 Australian Year 6 students after using for 10 weeks digital story-telling. Then, to observe a change in participants' attitude toward learning CFL using the story-telling method, an intervention time longer than three weeks might be needed.

5. In relation to Research Objective 5, the results revealed no significant difference in the gain in Chinese academic achievement between K1 students under game-based and story-telling methods at the target school. This was similar to Peng (2020), who found no



significant difference in the gain in Chinese academic achievement between Thai Grade 1 students under the game and traditional methods during 3 weeks. One reason for this can be how effective both methods have been reported for children's language learning (e.g., Fu, 2018; Luo, 2013). Another reason could be the intervention length not being long enough to provide larger effects from either method (e.g., Fu, 2018; Wen, 2018).

6. In relation to Research Objective 6, the results revealed a significant difference in the gain in attitude toward learning CFL between K1 students under game-based and story-telling methods at the target school. This was in line with Peng (2020), who found a significant difference in attitude toward Chinese language class between Thai Grade 1 students under the game and traditional methods. A reason why a significant difference in attitude toward learning CFL was observed between the experimental and control groups could be the nature of the learning methods considered in this study: the game-based method uses gamification to create a relaxed play-like learning experience for students (Landers, 2014), while with the story-telling approach, children are aware of being engaged in some kind of formal instruction (Sulzby, 1985; Teale & Sulzby, 1986).

Body of Knowledge

Figure 4 depicts the body of knowledge integrating the factors that were found to influence participants' Chinese academic achievement and attitude toward learning CFL.



Figure 4 Body of Knowledge From This Research Study

Consideration of children's affective variables (e.g., their attitude toward foreign language learning, language anxiety, enjoyment, enthusiasm, interest, and perceived relevance or difficulty to learn the language) is key in effectively planning lessons or designing an intervention to improve children's language academic achievement (Gardner, 2010). Then, based on the affective variables, children's knowledge of, and skills in, the foreign language, and their developmental skills, the intervention variables (e.g., learning method, intervention length, topics, instructional activities, teaching aids) are defined and accommodated by the teacher (Brown, 2002; ; Landers, 2014; Sulzby, 1985). The influence on children's language academic achievement results from the teacher implementing the



planned lesson or intervention and reflectively monitoring the student learning, through considering the teaching variables (e.g., teaching quality, classroom management, student assessment, feedback to students) and their cyclical interaction with children's affective variables, knowledge and skills, and the intervention variables (Peng, 2020; Wen, 2018).

Conclusions

The researchers sum up here the main conclusions drawn from the data analysis.

1. The level of Chinese academic achievement (i.e., the comprehension of the literacy knowledge attained or skills developed in Chinese language class) held by the K1 students in the experimental group was found to be needing improvement before using the game-based learning method, and reached a meets expectations level after using it.

2. The level of Chinese academic achievement held by the K1 students in the control group was found to be meeting expectations before using the story-telling learning method, and reached an exceeds expectations level after using it.

3. The level of attitudes toward learning CFL (i.e., the psychological tendency that affects learners' beliefs and feelings toward learning Chinese language and determines their favor or disfavor toward it) held by K1 students in the experimental group was found to be moderate before using the game-based method, and turned positive after using it.

4. The level of attitudes toward learning CFL held by K1 students in the control group was found to be positive before and after using the story-telling method.

5. No significant difference was found in the gain in Chinese academic achievement between K1 students from the target school learning under game-based method and those learning under story-telling method, at a significance level of .05.

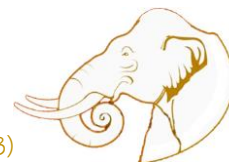
6. A significant difference in the gain in attitude toward learning CFL was found between K1 students from the target school learning under game-based method and those learning under story-telling method, at a significance level of .05.

Suggestions

From the findings, some suggestions for practice and future research are provided.

1. Suggestions for Practice

1) Even though no significant difference was seen in the gain in Chinese academic achievement between the learning methods after the intervention, interesting effects of each method were identified. For students trying to attain an "exceeds expectations" level of Chinese academic achievement, the game-based learning method was more effective than the story-telling one, while the story-telling method was more effective in moving students out from a "needs improvement" level of Chinese academic achievement than the game-based one (see Tables 2 & 3). Thus, the researchers suggest Chinese language



teachers to teach children combining the game-based and story-telling methods, to help students attain and keep higher levels of Chinese academic achievement.

2) Based on the previous suggestion, the researchers recommend young learners to engage in Chinese language learning activities outside the classroom, combining the game-based and story-telling methods, in order to increase their Chinese vocabulary and attain higher levels of academic achievement. For example, children can engage in role-playing games at home and pretend they are a Chinese language teacher and their parents, siblings, friends, dolls or pets are the students, and then share with them stories in Chinese by reading Chinese picture books (Brown, 2002; Landers, 2014; Sulzby, 1985).

2. Suggestions for Future Research

1) Because no significant difference in gain in Chinese academic achievement was found between the experimental and control groups after the 3-week intervention, the intervention length may have not been long enough to provide larger effects from either method. Then, future studies may try similar interventions for longer than 3 weeks (like in the studies conducted by Fu [2018] and Wen [2018]), to draw more solid conclusions on the effectiveness of either method on Chinese academic achievement.

2) We suggest future researchers who might be interested in examining students' Chinese academic achievement and attitudes toward learning CFL under the game-based and story-telling methods, to conduct studies on different types of schools, a wider range of grade levels (i.e., cross-sectional studies), or repetitive cohort studies over extended periods of time (i.e., longitudinal studies), in order to obtain more generalizable results.

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