Malaysian Non-native Chinese Students' Challenges and Learning Strategies in Chinese Characters Learning

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Abstracts

This study investigates the challenges faced by non-native Chinese learners in learning Chinese characters and their learning strategies. This research applied quantitative research, where the questionnaire was delivered at the end of the semester to 370 students of Mandarin level two, selected through convenience sampling. The descriptive analysis showed that most of the students stated that being literate in Chinese characters and learning many Chinese characters was the most challenging act while corresponding between characters and their pronunciations was the least challenging. Next, the students listed repetitively memorising Chinese characters as the preferred learning strategy, followed by imitating each stroke of a Chinese character and picturing what Chinese characters look like in their minds. The finding of this study contradicts other research studies since the students in this study did not perceive the "lack of correspondence between characters and their pronunciation in Chinese character learning" as the main challenge since they only learned 105 Chinese characters for two semesters. Nonetheless, this study also supports similar research on learning strategies in that students have difficulty learning Chinese characters as there are too many characters, too many pronunciations, and too many strokes. Hence, they repeatedly imitate and memorise the characters as learning strategies. Thus, memory strategies and graphic strategies are the main learning strategies to help learners cope with learning Chinese characters. For future study, it is recommended to find out whether there is any correlation between the challenges for non-native Chinese learners and the learning strategies they apply, which will give teachers an idea of how to improve their teaching to support learners' learning strategies to boost their Chinese character learning.

Keywords: Chinese characters learning, Non-native Chinese learners, challenges, learning strategy

INTRODUCTION

Mandarin has become an important global language. This condition can be explained as the language has an official status in China and Taiwan, which consists of 900 million Mandarin native speakers worldwide (Simons and Fennig, 2018). Besides that, China has recently shown prominent growth in the world economy and political status. Due to many native speakers and their economic and political influence, there is an increase in the number of non-native Chinese learners worldwide. To learn Mandarin, the characteristics of the language should be a concern. As Liu (2006) pointed out, Mandarin uses Chinese characters as the symbol for written language, which is formed by shapes, sounds, and semantics that cause non-native learners' problems when learning the language. Hence, this research mainly investigates non-native Chinese learners' perspectives on challenges and learning strategies applied to their Chinese character learning.

PROBLEM STATEMENT

Most of the previous studies conducted by many researchers showed that non-native Chinese learners still have a problem with learning Chinese characters. Also, a lot of students think that the Chinese character is the most challenging part of learning the language, followed by the grammar, vocabulary, intonation, and pronunciation, respectively (Nurul Ain Chua et al., 2020).

The biggest obstacle for non-native Chinese speakers learning Chinese characters, according to Hu (2010), is that there is a limited connection between Chinese characters and pronunciation, which causes problems for non-native speakers who are accustomed to reading using an alphabet. Furthermore, because the strokes of alphabetical letters are significantly simpler than Chinese strokes, the configuration of strokes might be highly diverse and complex for non-native Chinese speakers (Kan, Owen, and Bax 2018). As a result, Kirkpatrick (1995) argues that due to significant differences between European and Asian languages, introducing the Asian language to non-heritage beginners could be confusing and time-consuming, which could explain the difficulties non-native Chinese learners have in learning Chinese characters. The difficulties and challenges that other institutions face around the world imply that the learners do not know "how to acquire" Chinese characters, resulting in inefficiency in their Chinese characters learning.

Likewise, these perceptions are also shared by the students taking the Chinese language as a third language subject at Universiti Malaysia Kelantan (UMK). For more than a decade, the Faculty of Language Studies and Human Development (FBI) at UMK has been offering Mandarin subjects with three levels, which are Mandarin levels 1 and 2 (Basic Mandarin), and Mandarin level 3 (Intermediate Mandarin), to non-native Chinese learners solely. However, based on the students' final grades at the end of their third semester, it appears that the majority of them were still unable to write the characters yet; only a few were able to do so, but the characters were not written completely correct.

However, blaming students alone for the problem of learning is unfair because the problem of teaching is the source of the problem of learning. The difficulty may not be solely due to the learners, but rather to an ineffective teaching approach or a course syllabus. For example, according to the concept, the attention should be on the peculiarities of the Chinese language and its characters, particularly Chinese character acquisition, so that learners may easily acquire the Chinese characters (Hu, 2003). He said that the core unit of the Chinese language is the character, as opposed to the essential structure of the English language, which is the word. As a result, educators should develop their own methods for teaching and studying Chinese.

After ten years of studying Chinese character acquisition among non-native Chinese students at Universiti Malaysia Kelantan, we discovered that students continue to struggle with reading and writing Chinese characters. As a result, educators must determine the source of these troublesome situations in order to aid students in dealing with Chinese character learning difficulties.

Research objectives

First, the study hopes to discover non-native Chinese learners' challenges in learning Chinese characters during Mandarin classes, and the next step is to examine the learning strategies used by non-native Chinese learners to improve their Chinese character learning quality.

Research questions

1. What are the challenges faced by non-native Chinese learners in their Chinese characters learning?
2. What are the learning strategies used by non-native Chinese learners to improve their Chinese characters learning quality?

Significance of the study

In the past decade, the Chinese language has become a popular language among non-Chinese native speakers in Malaysia, be it the Malay ethnic group, Indians, or others. The government also seems to foresee the greatness and importance of this acknowledged challenging language as it is widely offered as a foreign language or as a third language subject in both public and private secondary schools and universities throughout the nation. Since the Chinese language is continuously gaining in popularity and importance as the globally widely spoken language, it is advantageous for Malaysian students, particularly non-native Chinese learners, to master the Chinese language in this boundless era.

Next, the investigation of this study is significant for the Chinese language teachers in Universiti Malaysia Kelantan as well as in other Malaysian universities to better understand the causes and areas of the Chinese character learning problem in the Malaysian context. The results would provide teachers with the challenges encountered by learners and, at the same time, the learning strategies that learners apply the most in learning Chinese characters. It is further hoped the findings will also provide teachers teaching Mandarin as a Foreign Language with some helpful knowledge on non-native Chinese learners' learning challenges and learning strategies in recognizing and writing the Chinese characters so that teachers can keep upgrading their teaching and learning to motivate the learners towards mastering the Chinese characters.

LITERATURE REVIEW

Characteristics of Chinese Characters

Chen et al. (2013) have mentioned the characteristics of Chinese characters, which are made up of three structural tiers, namely strokes, radicals, and characters. Furthermore, the combination of strokes is made up of radicals, and the combinations of radicals are made up of characters. Lastly, characters are the smallest meaningful unit in the Chinese writing system. According to Lu et al. (2014), eight basic radicals are used to generate 44 additional radical shapes, which are used to build over 7000 frequently used characters. The formation of the frequently used characters is based on relational writing principles such as stroke order and positioning of radicals (Chang et al., 2014).

Strokes are the basic lines of the writing system. Radicals or root characters are created via combinations of strokes based on set rules. Radicals give clues to the character's meaning and pronunciation. Characters with only one radical are classified as simple characters, for example, "女 (female)". Characters that are made up of more than one radical are classified as compound characters, for example, "妈 (mother, pronounced as "mā")" consists of a combination of the root characters "女 (female)" and "马 (horse)". "女 (female)" is used as a radical on the left of the character "妈 (mother)" to clue the reader on the character's being related to a female. "马 (horse)" is pronounced as "mǎ" and is positioned to the right of the character "妈 (mother)" to provide a phonetic cue indicating that "妈 (mother)" has the same pronunciation as "马 (horse)" but a different tone. This situation is similar to that in which inflectional affixes in English can provide meaning or pronunciation clues. For example, the radical "口" indicates having to do with "mouth", which helps semantically explain characters like "吃 (eat)" and "喝 (drink)".

In terms of phraseology, most characters are free morphemes, but most of them need to be combined to make words and phrases. Using characters in concert with other characters to form words and phrases is central to communicating in written Chinese. For example, months of the year are written based on the combination of numerical 1-12 and 月 (month), January is 一月, February is 二月, and so on. Hence, the writing for months of the year is based on a synthesis of understanding of how characters can be used together to express ideas via context and juxtaposition, and the meaning of the individual characters. The same condition goes to the character "好 (good)". Learners need to know the character they are writing, and they need to make sure that the characters "女" and "子" are written in a close gap

because if there is a wide gap between "女" and "子", it will form two separate characters, which are 女子 (female). Hence, non-native Chinese learners need to be alert to Chinese characters writing systems since there are no spaces in Chinese writing that make the recognition of words and phrases more complex without explicit signals for when a word ends, and another begins.

Due to the complexity of the Chinese character writing system, it requires non-native Chinese learners to exert effort, explain, and take time to acquire since character learning is a complicated and multi-layered process.

Challenges in Chinese Characters Learning

It is a great challenge for non-native Chinese learners to learn Chinese characters when many pieces of research have proved that Chinese character acquisition has been identified as a primary sticking point for those who have never learned a character-based writing system before (Hu, 2010, Ke et al., 2001, Shei & Hsieh, 2012, Shen, 2015, cited in Olmanson & Liu, 2017). Hence, many researchers pointed out their arguments on difficulties identified as challenges for non-native Chinese learners in their Chinese characters learning.

Shen (2013) asserts that non-native Chinese learners have been facing the challenges of retention and retrieval of the three elements of Chinese characters, which are sound (pronunciation), shape (visual presentation or the written form of the character) and meaning. In the meantime, Lu et al. (2014) identified three challenges to Chinese character acquisition for non-native Chinese learners. The first challenge is the development of structural awareness of characters, which is a big challenge for learners unfamiliar with the Chinese writing system to notice and make sense of information embedded within the Chinese character structure. The second challenge is executing the correct stroke order, which the learners constantly struggle with following proper stroke sequencing even after repeated instruction. Finally, the third challenge for students is making connections between characters and their corresponding pronunciation. On the other hand, Hu's (2010) research findings on non-native Chinese learners in the UK reported that the learners face challenges with character learning: recalling how to write words, recognising the words, and recalling vocabulary.

However, according to Olmanson and Liu (2017), relying on repetition, memorisation, and stroke practice magnifies the disconnection between the spoken and written systems, making the pace of character acquisition remain flat. This situation creates significant differences in spoken and written language development speeds that result in much larger spoken vocabulary than written ones.

Research about Chinese character learning strategy

The early studies on Chinese characters learning strategies for non-native Chinese learners mainly investigated the learning strategies for character recognition (Hayes, 1998; Shen 2004). Hayes (1988) conducted the first-ever investigation into learners' strategies for recognising Chinese characters. In the research, Hayes (1988) designed two tasks to determine whether beginners would correctly recognise the target character that was mixed with phonological, graphic, and semantic distractors. The first task grouped the target character with random individual characters, while the second task wove the target character into a complete sentence. The findings started with the premise that the dominant processing strategies would be revealed by the types of errors that the learners made. Hence, the study discovered that learners used a mixture of visual and graphic strategies in encoding the individual characters, whereas they used the graphic strategies more to identify the target character in sentence contexts (Jiang & Cohen, 2012).

Several researchers focused their Chinese character studies on describing the general strategies used by English-speaking learners to learn Chinese characters. McGinnis (1999) conducted a study with 29 first-year college learners of Chinese Foreign Language (CFL) who self-reported their character learning strategies in a five-week summer immersion program. In the study, he found that learners used a range

of strategies, including rote repetition, creating personal stories about how the characters looked or sounded, and the use of radicals and phonetic components to memorise characters. The first two types of strategies were mainly applied by learners in the study. Shen's (2005) study investigated learning strategies that 95 English-speaking learners of Chinese commonly used; the study further explores the underlying variables for students' strategy use. The findings showed that learners used as many as 30 types of strategies for character learning, which were further grouped into two main categories: orthographic knowledge-based cognitive strategies and metacognitive strategies (Shen, 2005, p.61). Yin (2003) conducted a longitudinal study on CFL beginner learners' learning difficulties and coping strategies for a 3-year period. The study discovered that 91% of learners used the strategy of writing characters repeatedly, 77% memorised character components (radical and phonetic components) or repeatedly read characters out loud regarding Hanyu pinyin, which is the official system to transcribe Chinese characters into the Roman alphabet. Meanwhile, 65% used phonetic components if available in characters and 62% used flashcards to learn the Chinese characters. Chen (2009) further conducted a study among 65 beginners of American learners, it was discovered that there were two most favourably used learning strategies: graphic strategies and memory strategies (focusing on learned graphic components or associating characters with similar radicals).

Besides that, a few researchers went even further and investigated the efficiency of different learning strategies. Learners were asked to compare 11 pairs of Chinese character learning strategies in Ke's (1998) study. He discovered that, while most students valued learning and utilizing character components, only half of them thought that focusing on the character structure (radical and phonetic components) was an effective method. The majority of students believed that memorizing characters was more useful than finding recurring character traits. Learners in the self-generated mnemonics treatment group outperformed those in the visual coding, verbal coding, and translation method groups, according to Kuo and Hooper's (2004) study.

The visual and verbal coding groups, on the other hand, outperformed the translation strategies group. Zhao and Jiang (2002) looked at how Chinese character learning strategies affected 124 non-native Chinese speakers. They discovered that employing the Chinese language in discussions or writing, as well as summarizing learnt characters with similar pronunciation, meaning, or graphic elements, tended to be the most beneficial. As a result, Chen's (2011) study found that learners' understanding of semantic, phonetic, and positional components may be important in improving their character learning achievement.

In the Malaysian context, however, there are some studies on teaching Chinese characters to non-native Chinese learners. According to Ain Chua (2020), Chinese characters are the most difficult aspect to master for Malaysian non-native Chinese learners. The research covered a wide range of topics, including learning composition, giving a speech, oral communication, vocabulary expansion, grammar, tone, pronunciation, and Chinese characters. At the same time, the study shows how learners employ coping mechanisms such as memorising ways to concentrate on the shapes of Chinese characters as a full picture and its components. Ting et al. (2019) also compared traditional Chinese character learning strategies, which are based on rote learning or rote repetition, to Mobile learning-assisted language acquisition (MALL). They discovered that the traditional method group outperforms the group that uses mobile apps by a small margin. Furthermore, Goh (2016) conducted an empirical investigation on Pleco. It is an incredible dictionary and a fantastic software for Android and iOS. It offers a lot of user-friendly features that can help learners learn Chinese characters better. Pleco is a useful tool for non-native Chinese learners to acquire Chinese characters, according to the findings of the study. Even though the research described focuses on the usage of mobile apps in Chinese character learning among non-native Chinese learners, there is still a need to investigate the learners' preferred learning strategies. As a result, the purpose of this study is to fill in the gaps to assist teachers in improving their teaching of Chinese characters.

METHODOLOGY

This is a quantitative study in which descriptive research was used. Through convenience sampling, 370 non-native Chinese students enrolled in Mandarin level two classes at a university in the Malaysian state of Kelantan were chosen. Before enrolling in the Mandarin level 2 course, the students must first complete and pass the Mandarin level 1 course. The study was place from February 15th through May 31st, 2019. Learners had acquired a total of 105 Chinese characters over their Mandarin level one and level two courses.

Research Instrument

The study used a questionnaire adapted from Shen (2005) that included learning challenges and strategies for learning Chinese characters. The questionnaire is divided into three sections, as stated in Table: Sections A, B, and C. Four questions in Section A document respondents' demographic data, such as age, gender, ethics, and faculty. The respondents will then be asked five questions in Section B on the challenges they had learning Chinese Characters and ten questions in Section C about the ways they utilized to recognize Chinese Characters during their learning process. On the value of the agreement, the questionnaire uses a five-point Likert Scale (strongly disagree to agree strongly).

Table 1 Section B items

Section B

No	Item
1.	More Time and Effort Consuming in Chinese Character Learning
2.	Lack of Correspondence between Character and Its Pronunciation in Chinese Character Learning
3.	To be Chinese Characters Literate, a Huge Number of Chinese Characters Needed to be Learnt
4.	Difficulty to Differentiate the Shape of Different Chinese Characters in Chinese Character Learning
5.	Difficulty to Memorise Stroke Knowledge in Chinese Character Learning

Table 2 Section C items

Section C

No.	Items
1.	The Strategy of Imitating Each Stroke of a Chinese Character Several Times
2.	The Strategy of Division of Constructed Parts of Chinese Character According to the Meaning of the Chinese Character.
3.	The Strategy of Repetitive Memorising Chinese Character
4.	The Strategy of Paying Attention to How Chinese Characters Used in the Context

5. The Strategy of Observing Strokes Order of Chinese Character Carefully

6. The Strategy of Using Chinese Characters in Sentences Orally

7. The Strategy of Reviewing Chinese Characters by Writing Several Times

8. The Strategy of Trying to Picture What Chinese Characters Look Like in Mind

9. The Strategy of Trying To make the Association with a Similar Chinese Character Previously Learnt

10. The Strategy of Trying to Make the Association between Chinese Character and its Pronunciation

The two sections of the study questionnaire, Section B and Section C, were tested to guarantee that the internal reliability of the questionnaire met the standard of 0.7 or higher. As a result, section B included five entries, and Cronbach's alpha was 0.764. Section C, on the other hand, has 10 items with a Cronbach's alpha of 0.911.

Table 3 Result of Cronbach's Alpha for items in Section B and Section C

Section B		Section C	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
0.764	5	0.911	10

All of the data is descriptively analyzed with SPSS Statistics for Windows, Version 20, and the results are interpreted and presented further in the following section.

Ethical consideration

The respondents' right to confidentiality is communicated, as well as their freedom to refuse participation in the study. All of the survey participants were informed volunteers who were aware that their replies would be utilized for research purposes. The right to full disclosure of the research topic and study findings is likewise protected.

RESULTS

The results concluded with a demographic analysis of the sample, followed by a descriptive analysis result of section B, which includes challenges faced by non-native Chinese learners in learning Chinese characters, and finally, a descriptive analysis result of section C, which includes learning strategies used by learners in learning Chinese characters.

The demographic analysis showed that the learners were aged 20-26; The learners were mostly Malays (86.2%), followed by Indians (10.3%), and other ethnicities (3.5%). The results also revealed that the majority of non-native Chinese learners are female (86.5%), with only 13.5 percent being male.

Challenges faced by non-native Chinese learners in Chinese characters learning

The mean and standard deviation for section B, which had five items, were shown in Table 4 below. The item with the highest mean score, 3.89, was 'to be Chinese characters literate, a huge number of Chinese characters needed to be learnt.' The item 'difficulty to memorise stroke knowledge in Chinese character learning' came in second with a score of 3.84. The item 'more time and effort consuming the Chinese character learning' received a mean score of 3.76. The average score for the item 'difficulty differentiating the shape of different Chinese characters in Chinese character learning' is 3.72. Finally, the item 'lack of correspondence between characters and their pronunciations in Chinese characters learning' had the lowest mean score of 3.14.

Table 4 Means and standard deviation for Section B

	Mean	Std. Deviation
More Time and Effort Consuming in Chinese Character Learning	3.76	0.83
Lack of Correspondence between Character and Its Pronunciation in Chinese Character Learning	3.14	0.85
To be Chinese Character Literate, a Huge Number of Chinese characters Needed to be Learnt	3.89	0.85
Difficulty to Differentiate the Shape of Different Chinese Characters in Chinese Character Learning	3.72	0.89
Difficulty to Memorise Stroke Knowledge in Chinese Character Learning	3.84	0.88

When looking at the descriptive analysis for each item in Section B, the biggest number of learners, 101 or 27.3 percent, strongly agree that a huge number of Chinese characters needed to be learnt in order to be Chinese characters literate. There are 87 or 23.5% of learners strongly agree that they face difficulty in remembering strokes in Chinese characters learning and 76 or 20.5% of learners indicated that they need more time and effort consuming in Chinese character learning. In addition, 76 percent of students (or 20.5 percent) said they needed more time and effort to learn Chinese characters. In Chinese character learning, 73 percent of learners (or 19.7%) strongly agree that differentiating the shape of different Chinese characters is difficult. Only 23 percent of learners, or 6.2 percent, believe there is a lack of correspondence between character and pronunciation when learning Chinese characters.

There are 163 (44.1%) learners who agree that memorising stroke knowledge is difficult in Chinese character learning, which has the biggest number of learners. It is followed by 153 (41.4%) learners who agree that they have difficulty differentiating the shape of different Chinese characters when studying Chinese characters. More time and effort are needed in learning Chinese characters, according to 148 (or 40%) of learners. Meanwhile, 139 learners (37.6%) agree that learning a huge number of Chinese characters is required to be Chinese characters literate. Finally, 87 percent (23.5 percent) of learners agree that there is a lack of correspondence between characters and their pronunciation in Chinese character learning.

For the statements below that are neither agree nor disagree, the greatest number of learners, 188 or 50.8 percent, have a neutral agreement for the lack of character and pronunciation correspondence in Chinese character learning. The result is followed by 131 (35.4%) learners who are unconcerned about the statement that Chinese character learning takes more time and effort. The statement that many Chinese characters needed to be learnt to become Chinese characters literate is met with a neutral response from 120 (32.4%) of learners. Meanwhile, 118 (31.9%) of learners agree that it is difficult to

differentiate the shape of different Chinese characters in learning Chinese characters. 98 or 26.5% of learners, which is the least number with neutral agreement toward the statement, it is difficult to memorise stroke knowledge in Chinese character learning.

There are 64 or 17.3% of learners who disagree that there is a lack of correspondence between characters and their pronunciation in Chinese character learning, which is the greatest percentage. In Chinese character learning, 21 or 5.7 percent of learners argue that they have difficulty differentiating the shape of different Chinese characters. There are 18 (4.9%) learners who disagree with the notion that memorising stroke knowledge in Chinese character learning is difficult. Only 13 out of 3.5 percent of students argue that learning Chinese characters requires more time and effort. And 8 percent of students, or 2.2 percent, disagree with the statement that a huge number of Chinese characters needed to be learnt in order to become literate.

There are 8 or 2.2 percent of learners who strongly disagree with the statements below. This is the biggest number of learners who strongly disagree that there is a lack of correspondence between characters and their pronunciation in Chinese character learning. It is followed by 5 or 1.4 percent of learners who strongly disagree that learning Chinese characters is difficult since different Chinese characters have different shapes. Finally, 4 or 1.1 percent of learners strongly disagree that memorising stroke knowledge in Chinese character learning is difficult. Meanwhile, only 2 or 0.5 percent of learners strongly disagree with the notion that learning Chinese characters requires more time and effort, and that a huge number of characters needed to be learnt to become Chinese characters literate.

Table 5 Descriptive analysis for items in Section B

No.	Items	Level of Agreement				
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.	More time and effort consuming in Chinese character learning.	2 (0.5%)	13 (3.5%)	131 (35.4%)	148 (40%)	76 (20.5%)
2.	Lack of correspondence between character and its pronunciation in Chinese character learning	8 (2.2%)	64 (17.3%)	188 (50.8%)	87 (23.5%)	23 (6.2%)
3.	To be Chinese characters literate, a huge number of Chinese characters needed to be learnt	2 (0.5%)	8 (2.2%)	120 (32.4%)	139 (37.6%)	101 (27.3%)
4.	Difficulty to differentiate the shape of different Chinese characters in Chinese character learning	5 (1.4%)	21 (5.7%)	118 (31.9%)	153 (41.4%)	73 (19.7%)
5.	Difficulty to memorise stroke knowledge in Chinese character learning	4 (1.1%)	18 (4.9%)	98 (26.5%)	163 (44.1%)	87 (23.5%)

Learning strategies applied by non-native Chinese learners in Chinese characters learning

The mean and standard deviation for items in Section C, which are concerning non-native Chinese learners' learning strategies, are shown in Table 6. 'The strategy of repetitive memorising Chinese characters,' with a mean score of 3.92, is the item with the highest mean score. The result is followed by 'The strategy of imitating each stroke of a Chinese character several times', which is 3.81. The average score for 'trying to picture what Chinese characters look like in mind' is 3.80. 'The strategy of observing stroke order of Chinese characters carefully' yields a mean score of 3.69. The next result is 3.62, which is 'The strategy of trying to make an association with a similar Chinese character previously learnt.' Following that, 'The strategy of reviewing Chinese characters by writing several times' has a mean score of 3.58. Meanwhile, the mean score for 'The strategy of paying attention to how Chinese characters are used in the context' is 3.47, followed by 3.45 for 'Trying to make the association between Chinese characters and their pronunciation.' Then there's 'The strategy of the division of constructed parts of Chinese characters according to the meaning,' which has a mean score of 3.35. The strategy of using Chinese characters in sentences orally has the lowest mean score, 3.19.

Table 6 Mean and standard deviation for items in Section C

	Mean	Std. Deviation
The strategy of imitating each stroke of a Chinese character several times	3.81	0.85
The strategy of the division of constructed parts of Chinese characters according to the meaning of the Chinese character	3.35	0.94
The strategy of repetitive memorising Chinese character	3.92	0.85
The strategy of paying attention to how Chinese characters used in the context	3.47	0.90
The strategy of observing the stroke order of Chinese characters carefully	3.69	0.89
The strategy of using Chinese characters in sentences orally	3.19	0.96
The strategy of reviewing Chinese characters by writing several times	3.58	0.96
The strategy of trying to picture what Chinese characters look like in mind	3.80	0.90
The strategy of trying to make the association with a similar Chinese character previously learnt	3.62	0.82
The strategy of trying to make the association between Chinese characters and their pronunciation	3.45	0.90

The descriptive analysis for Section C, which is the learning strategy that learners strongly agree they use in learning Chinese characters, is shown in Table 7. The highest percentage of learners, 93 percent, strongly agree that they apply 'The strategy of repetitive memorising Chinese characters,' followed by 88 percent, who strongly agree that they apply 'The strategy of trying to picture what Chinese characters look like in mind,' and 80 percent, who strongly agree that they apply 'The strategy of imitating each

stroke of a Chinese character several times.' There are 69 (18.6%) and 66 (17.8%) learners who strongly agree that they used "The strategy of reviewing Chinese characters by writing several times" and "The strategy of reviewing Chinese characters by writing several times," respectively. Meanwhile, 47 (12.7%), 46 (12.4%), 43 (11.6%), and 42 (11.4%) of learners strongly agree that they use "the strategy of trying to make an association with a similar Chinese character previously learnt," "the strategy of paying attention to how Chinese characters used in context," "the strategy of the division of constructed parts of Chinese characters according to the meaning of the Chinese character," and "the strategy of and 'The strategy of trying to make the association between Chinese character and its pronunciation'. In contrast, only 31.4% of learners strongly agree that they apply 'The strategy of using Chinese characters in sentences orally' in learning Chinese characters.

The biggest percentage of learners, 179 (48.4%), agree that "the repetitive memorising Chinese character strategy is the strategy they apply in learning Chinese characters." The result is followed by 'The strategy of trying to make the association with a similar Chinese character previously learnt,' which has 167 (45.1%) learners agreeing with this learning strategy, and 161 (43.5%) learners agreeing with 'The strategy of imitating each stroke of a Chinese character several times,' which they use in learning Chinese characters. Meanwhile, 152 (41.1%) of learners agree with 'The strategy of observing strokes order of Chinese characters carefully" in learning Chinese characters, 147 (39.7%) of learners agree with "The strategy of trying to picture what Chinese characters look like in mind," 139 (37.6%) of learners agree with "The strategy of trying to make the association between Chinese character and its pronunciation," and 133 (35.9%) of learners agree with 'The strategy of paying attention to how Chinese characters are used in the context', followed by 'The strategy of reviewing Chinese characters by writing several times' with 132 or 35.7% of learners. 'The strategy of the division of constructed parts of Chinese character according to the meaning of the Chinese character' has the least number of learners, which is 112 or 30.3%. Finally, there are 106 or 28.6% of learners apply the strategy of using Chinese characters in sentences orally.

There are 158 or 42.7% of learners, which is the highest number of learners who are neutral toward the 'The strategy of the division of constructed parts of Chinese character according to the meaning of the Chinese character' in their Chinese characters learning. The result is followed by 'The strategy of using Chinese characters in sentences orally', which is 152 or 41.1% of learners, 'The strategy of paying attention to how Chinese characters are used in the context' has 147 or 39.7% of learners, 'The strategy of trying to make the association between Chinese character and its pronunciation' has 141 or 38.1% of learners, 'The strategy of reviewing Chinese characters by writing several times' has 128 or 34.6% of learners. Meanwhile, 'The strategy of trying to make the association with a similar Chinese character previously learnt' has 125 or 33.8% of learners with a neutral agreement, followed by 117 or 31.6% of learners are neutral with 'The strategy of observing strokes order of Chinese character carefully'. 110 or 29.7% of learners have neutral agreement toward 'The strategy of trying to picture what Chinese characters look like in mind', while 'The strategy of imitating each stroke of a Chinese character several times' has 108 or 29.2% of learners. The least number with 78 or 21.1% of learners have a neutral agreement with 'The strategy of repetitive memorising Chinese character' in Chinese characters learning.

The highest number of learners about 66 or 17.8% disagree with the application 'The strategy of using Chinese characters in sentences orally' in Chinese characters learning. The result followed by 'The strategy of the division of constructed parts of Chinese character according to the meaning of the Chinese character', which is 47 or 12.7%, 'The strategy of trying to make the association between Chinese character and its pronunciation' has 41 or 11.1% of learners, 'The strategy of paying attention to how Chinese character used in the context' has 38 or 10.3% of learners, followed by 37 or 10% for 'The strategy of reviewing Chinese characters by writing several times', 30 or 8.1% for 'The strategy of trying making the association with a similar Chinese character previously learnt' and 29 or 7.8% for 'The strategy of observing strokes order of Chinese character '. 'The strategy of trying to picture what Chinese characters look like in mind' has 22 or 5.9% of learners, 'The strategy of imitating each stroke of a Chinese character several times' has 20 or 5.4% of learners and the least number of learners with

17 or 4.6% who disagree with 'The strategy of repetitive memorising Chinese character' application in their Chinese characters learning.

For the level of agreement "strongly disagree" with the statements below, 'The strategy of using Chinese characters in sentences orally' has the highest number of learners, which is 15 or 4.1% who disagree with the application of learning strategy in their Chinese characters learning. 'The strategy of the division of constructed parts of Chinese character according to the meaning of the Chinese character' has 10 or 2.7% of learners, 'The strategy of reviewing Chinese characters by writing several times' and 'The strategy of trying to make the association between Chinese character and its pronunciation' both have 7 or 1.9% of learners, 'The strategy of paying attention to how Chinese character used in the context' has 6 or 1.6% of learners. 'The strategy of the repetitive memorising Chinese character',' The strategy of observing strokes order of Chinese characters carefully' and 'The strategy of trying to picture what Chinese characters look like in mind' have the same number of 3 or 0.8% of learners strongly disagree. Meanwhile, 'The strategy of trying to make the association with a similar Chinese character previously learnt' and 'The strategy of imitating each stroke of a Chinese character several times' have the least number of learners which is 1 or 0.3% who strongly disagree.

Table 7 Descriptive analysis for items in Section C

No.	Items	Level of Agreement				
		Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1.	The strategy of imitating each stroke of a Chinese character several times	1 (0.3%)	20 (5.4%)	108 (29.2%)	161 (43.5%)	80 (21.6%)
2.	The strategy of the division of constructed parts of Chinese characters according to the meaning of the Chinese character	10 (2.7%)	47 (12.7%)	158 (42.7%)	112 (30.3%)	43 (11.6%)
3.	The strategy of repetitive memorising Chinese character	3 (0.8%)	17 (4.6%)	78 (21.1%)	179 (48.4%)	93 (25.1%)
4.	The strategy of paying attention to how Chinese characters used in the context	6 (1.6%)	38 (10.3%)	147 (39.7%)	133 (35.9%)	46 (12.4%)
5.	The strategy of observing the stroke order of Chinese characters carefully	3 (0.8%)	29 (7.8%)	117 (31.6%)	152 (41.1%)	69 (18.6%)
6.	The strategy of using Chinese characters in sentences orally	15 (4.1%)	66 (17.8%)	152 (41.1%)	106 (28.6%)	31 (8.4%)
7.	The strategy of reviewing Chinese characters by writing several times	7 (1.9%)	37 (10%)	128 (34.6%)	132 (35.7%)	66 (17.8%)

8.	The strategy of trying to picture what Chinese characters look like in mind	3 (0.8%)	22 (5.9%)	110 (29.7%)	147 (39.7%)	88 (23.8%)
9.	The strategy of trying to make the association with a similar Chinese character previously learnt	1 (0.3%)	30 (8.1%)	125 (33.8%)	167 (45.1%)	47 (12.7%)
10.	The strategy of trying to make the association between Chinese characters and their pronunciation	7 (1.9%)	41 (11.1%)	141 (38.1%)	139 (37.6%)	42 (11.4%)

DISCUSSIONS AND CONCLUSION

The study is divided into four sections: the challenges faced by non-native Chinese learners, the learning strategies they applied in acquiring Chinese characters, the study's implications, and recommendations for further research.

Non-native Chinese learners face four major challenges, according to the research. The majority of learners strongly agree that learning a huge number of Chinese characters, memorising Chinese character stroke knowledge, differentiating the shape of different Chinese characters, and requiring more time and effort to learn Chinese characters are the major challenges in learning Chinese characters. This finding is supported by Sung and Wu (2011) and Huang and Ma (2007). According to Sung and Wu (2011), the massive number of characters one needs to learn to be fully literate in Chinese. Huang and Ma (2007) further describe the difficulty of learning Chinese characters as there are too many characters, pronunciations, and strokes. In the eyes of learners, several of the characters appear to be the same, making differentiation difficult. The findings also aligned with one of the challenges mentioned by Shen (2013) that non-native Chinese learners tend to constantly struggle in following proper stroke sequencing even after repeating practices. The result of the study is supported by Everson (1998) that systematically learning Chinese characters over the long term is a labour-intensive, endeavour as it uses up huge demands on their memory, time, and study capabilities. Thus, this point could explain that learning Chinese characters is time and effort consuming.

On the other hand, the statement "lack of correspondence between characters and their pronunciation in Chinese character learning" has the highest number of learners with disagree and neutral agreement. This finding is contradictory to Lee and Kalyuga's (2011) finding. As mentioned previously, they discovered that the lack of correspondence between characters and their pronunciation in Chinese character learning is one of the major challenges in Chinese character learning. This is because English-native learners who learn Chinese as a foreign language acquire both spoken and written knowledge at the same time. However, this research showed that non-native Chinese learners disagree with the statement because it is due to the limitation of the Chinese character learning syllabus that only 105 Chinese characters are required to be learned in the two semesters of learning. Hence, the statement "lack of correspondence between character and its pronunciation in Chinese character learning" is not perceived as a significant challenge for these learners.

The result of the research findings has the same result as Chen (2009), where researcher found that graphic strategies and memory strategies are the top two learning strategies for 65 American learners who are beginners in learning Chinese characters. A similar situation also happens in this research, where 'The strategy of imitating each stroke of a Chinese character several times', 'The strategy of the repetitive memorising Chinese characters", 'The strategy of reviewing Chinese characters by writing several times', and 'The strategy of observing strokes order of Chinese character ' are the learning

strategies that involve memory strategies. On the other hand, 'The strategy of trying to picture what Chinese characters look like in mind' and 'The strategy of trying to make the association with a similar Chinese character previously learnt' are strategies that have to do with graphic strategies, or in other words, they are called orthographic production based. This result is also supported by Sung (2012) who finds that the stroke-orthographic-knowledge strategy is one of the most frequently used strategies among non-native Chinese learners. According to Shen (2005) that 'The strategy of trying to make the association with a similar Chinese character previously learnt' is about analysing new characters by applying learned orthographic knowledge and identifying previously learned radicals or components that are semantically congruent with the new characters which could be considered effective strategies for character learning.

On the other hand, the result of 'The strategy of trying to make the association between Chinese character and its pronunciation' is aligned with 'lack of correspondence between character and its pronunciation in Chinese character learning', where it is not the main challenge and primary learning strategy applied for non-native Chinese learners in Malaysia context. The result could be explained by Shen (2005) that for those beginners of Chinese characters learning with limited knowledge of Chinese characters, the 'The strategy of trying to make the association between Chinese character and its pronunciation' would not be perceived as helpful learning strategies. However, once learners progress further details in learning Chinese characters, they may find that there is correspondence between a character and its pronunciation, and a character and its meaning.

The study found that non-native Chinese learners do not agree or have a neutral agreement with the statement 'lack of correspondence between character and its pronunciation in Chinese character learning. As they have a limited number of Chinese characters that are needed for them to learn. Hence, they feel that there are plenty of Chinese characters for them to acquire in order to be Chinese character literate. Meanwhile, the study indicates that memory strategies and graphic strategies are the main learning strategies that learners will apply to Chinese characters learning. Thus, the implications of the research could provide information for teachers to encourage learners in learning Chinese characters by improving teaching strategies that focus on the two most applied learning strategies by non-native Chinese learners.

Since this study was run on analysis separately between the challenges non-native Chinese learners faced in learning Chinese characters and the learning strategies they applied in their learning. Hence, for future research, it is recommended to find out whether there is any correlation between the challenges for non-native Chinese learners and the learning strategies they apply, which will give teachers an idea of how to improve their teaching to support learners' learning strategies to boost their Chinese characters learning.

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REFERENCES

Chang, L., Xu, Y., Perfetti, C., Zhang, J., & Chen, H. (2014) Supporting Orthographic Learning at the Beginning Stage of Learning to Read Chinese as a Second Language, International Journal of Disability, Development, and Education, 61:3, 288-305.

Chen, H. C., Hsu, C. C., Chang, L. Y., Lin, Y. C., Chang, K. E., & Sung, Y. T. (2013). Using a Radical-Derived Character E-Learning Platform to Increase Knowledge of Chinese Characters. Retrieved from https://scholarspace.manoa.hawaii.edu/bitstream/10125/24511/1/Chen%20HC.pdf

Chen, J. (陈静) (2011). 初中级阶段泰国留学生汉字部件学习策略实验研究 [An experimental study on Chinese character learning strategies used by beginning and intermediate level Thai students] 硕士论文 (Unpublished master dissertation) 成都(Chengdu): 西南大学 (South West University).

Chen, Y. W. (陈泽文) (2009). 初级阶段美国学生汉字学习策略的调查研究 [A survey and research on Chinese character learning strategies of American students in the initial stage] 武汉(Wuhan): 华东师范大学 (East China Normal University).

Chua, Nurul Ain & Ahmad Tajuddin, Azza Jauhar & Goh, Y.S. & Zaid, Che. (2020). Perceived Difficulties in Learning of Mandarin among Foreign-Language Learners and Strategies to Mitigate Them. Journal of Business and Social Development. 8(2). 43-52. 10.46754/jbsd.2020.09.005.

Everson M.E. (1998). Word Recognition among Learners of Chinese as a Foreign Language: Investigating the Relationship between Naming and Knowing. *The Modern Language Journal, 82*(2). 194-204.

Goh, Y.S. (2016). Empirical Study on The Use of Pleco for Improving Chinese Character Instruction: The Perception of Non-Native Learners of Chinese. *e-Academia Journal UiTMT, 5*(2), 23-31.

Hayes, E. (1988). Encoding strategies used by native and non-native readers of Chinese Mandarin. *Modern Language Journal, 72*(2*),* 188-195.

Hu, S. (2003). Teaching Chinese to English Background Primary School Students. *International Education Journal, 4(1)*. 60-69.

Hu, B.(2010). The Challenges of Chinese: A Preliminary Study of UK Learners' Perceptions of Difficulty. *Language Learning Journal 38* (1), 99–118.

Huang, J. S., & Ma, M. Y. (2007). A Study on the Cognitive of Complexity and Difficulty of Chinese Characters when Reading and Recognizing. Displays, 28(1), 8–25. Review from http://doi.org/10.1016/j.displa.2006.11.002

Jiang, X., & Cohen, A. D. (2012). A critical review of research on strategies in learning Chinese as both a second and foreign language. *Studies in Second Language Learning and Teaching*, *2*(1), 9-43. https://doi.org/10.14746/ssllt.2012.2.1.2

Kan, Q., Owen, N. & Bax, S. (2018). Researching Mobile-Assisted Chinese-Character Learning Strategies Among Adult Distance Learners. *Innovation in Language Learning and Teaching 12 (1)*, 56–71.

Ke, C. (1998). Effects of strategies on the learning of Chinese characters among foreign language students. Journal of Chinese Language Teachers Association,33(2), 93-112.

Kirkpatrick, A. (1995). Learning Asian Languages in Australia: Which Languages and When? [Paper Originally Presented at the AFMLTA Conference (10th: 1994: Perth)]. *Babel 30 (1*), 4–11.

Kuo, Mei-liang, A., & Hooper, S. (2004). The effects of visual and verbal coding mnemonics on learning Chinese characters in computer-based instruction. ETR&D, 52(3), 23-38.

Lee, C. H., & Kalyuga, S. (2011). Effectiveness of different pinyin presentation formats in learning Chinese characters: A cognitive load perspective. Language Learning, 61(4),1099–1117.

Liu, X. (2006). Hànyǔ Zuòwéi Dì Èr Yǔyán Jiàoyù Jiǎn Lùn. Beijing: Beijing Language and Culture University Press.

Lu, J., Meng, S., & Tam, V. (2014). Learning Chinese characters via mobile technology in a primary school classroom. Educational Media International, 51(3), 166– 184. Retrieve from http://doi.org/10.1080/09523987.2014.968448.

McGinnis, S. (1999). Student goals and approaches. In M. Chu (Ed.), Mapping the course of the Chinese language field (pp. 151-175). Kalamazoo, MI: Chinese Language Teachers Association.

Olmanson, J. & Liu, XC. (2017). The Challenge of Chinese Character Acquisition: Leveraging Multimodality in Overcoming a Centuries-Old Problem. *Emerging Learning Design Journa*l *4,* 1-9. Retrieved from http://digitalcommons.unl.edu/teachlearnfacpub/239

Shen, H. (2004). Level of cognitive processing: effects on character learning among non-native learners of Chinese as a foreign language. Language and Education,18(2), 167-182.

Shen, H. (2005). An investigation of Chinese-character learning strategies among non-native speakers of Chinese. System,33(1), 49-68.

Shen, H. H. (2013). Chinese L2 literacy development: Cognitive characteristics, learning strategies, and pedagogical interventions. Language and Linguistics Compass, 7(7), 371-387.

Simons, G. and Fennig, C. (eds.) (2018) *Ethnologue: Languages of the World*, 21st edn. Dallas, TA: SIL International. Online version: www.ethnologue.com.

Sung, K.Y. (2012). A study on Chinese-character learning strategies and character learning performance among Ameican learners of Chinese. Chinese as a Second Language Research, 1(2), 193-210

Sung, K., & Wu, H. (2011). Factors influencing the learning of Chinese characters. *International Journal of Bilingual Education and Bilingualism, 14(6)*, 683–700.

Ting, H.L., Ch'ng, L.C. & Nordea Unin. (2019). Learning To Write Chinese Characters Among Non-Native Chinese. International Innovation Teaching and Learning & Language Education. Conference *(E-Proceeding LEC 2019)* 1-11.

Williams, M., & Burden, R. (1997). Psychology for Language Teachers. Cambridge University Press.

Yin, J. H. (2003). 美国大学生记忆汉字时使用的方法--问卷调查报告 [A questionnaire study of American students' Chinese character memorization strategies]. Journal of the Chinese Language Teachers Association, 38(3), 69-90.

Zhao, G., & Jiang, X. (赵果 江新) (2002). 什么样的汉字学习策略最有效?对基础阶段留学生的一次调查研究 [What Chinese character learning strategy is the most effective? An investigation among beginning international students]. 语言文字应用 [Language Script Application], 2, 79-85.