

*A Preliminary Framework for Teaching Strategies to Chinese as  
a Foreign Language (CFL) Students for Character Learning*

Wenxin Zhang, Enlight International Education LTD, United Kingdom  
Amanda Mason, Liverpool John Moores University, United Kingdom

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**Abstract**

Learning to read and write Chinese is seen as one of the most challenging aspects for Chinese as a foreign language (CFL) students, particularly those whose first language has an alphabetic writing system. The selection and orchestration of learning strategies is understood to be a key part of successful language learning and studies have investigated some of the strategies that CFL students employ. Some of these have suggested the need for strategy instruction, but there is little guidance for teachers who want to support their learners. This paper reports on a mixed-methods study investigating the range of strategies employed by CFL students to develop a framework for instruction. Interviews were conducted with 12 students to gain a deeper understanding of how and why students engaged in character learning outside the classroom. The qualitative data were then used in the design of a survey investigating strategy use by different types of learners. Responses were received from 117 students with a range of first languages and at different levels of Chinese learning experience and proficiency. Quantitative analysis of the survey data reveals the most used strategies by a highly motivated group of learners. A preliminary framework for strategy instruction is proposed based on the key findings.

Keywords: Chinese Characters, Learning Strategies, Chinese as a Foreign Language

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## **1. Introduction**

Vocabulary acquisition is the foundation of language learning (Alderson, 2005), and since characters form the building blocks of vocabulary in Chinese, acquiring them is necessary to be literate. To pass the most advanced level of the Chinese proficiency test (HSK 6), learners must be able to recognise at least 5,000 characters (Hanban, 2019). The nature of its writing system is usually the main reason that Chinese is considered one of the most difficult languages for learners whose mother-tongue has an alphabetic script (Samimy & Lee, 1997; Hu, 2010). In addition to the quantity of characters that must be memorised, the logographic writing system presents several key challenges for learners including the complexity of the graphic configuration of Chinese characters (Ehrich et al, 2013), the lack of obvious sound-script correspondence (Ehrich et al, 2013; Shen, 2005), and the large number of homophones (Li et al. 2012).

As Chinese is considered a difficult language to learn (Samimy & Lee, 1997; Shen, 2005), it would seem to be an imperative for researchers to develop more knowledge and understanding of how learners master this challenging language. In the next section, the literature concerning Chinese character learning strategies is discussed in the wider context of second language vocabulary instruction and vocabulary learning strategies.

## **2. Literature Review**

### **2.1 Second Language Vocabulary Instruction**

Despite the widely held belief that second language learners could learn and consolidate vocabulary knowledge merely through extensive reading (Krashen, 1989), the resurgence of interest in vocabulary teaching in the 1990s (Cohen, 1990; Nation, 1990; Schmitt, 1997 and 2000) has shown that that explicit vocabulary instruction is desirable. There has also been an increased awareness of the role of learner strategies in successful vocabulary learning (Moir & Nation, 2008; Oxford, 2017) and calls for explicit vocabulary learning strategy (VLS) instruction (Cohen & Dornyei, 2002; Takač, 2008; Oxford, 2017). Given the specific challenges of vocabulary learning for CFL learners, both explicit vocabulary instruction and VLS instruction would seem even more important.

### **2.2 Vocabulary Learning Strategies (VLSs)**

A significant amount of research on VLSs has focussed on developing taxonomies of strategies (Ahmed, 1989; Gu & Johnson, 1996; Schmitt, 1997 and 2000; Cohen & Dornyei, 2002). Two important distinctions are between cognitive and metacognitive strategies, and mnemonic and rote-learning strategies (Gu & Johnson, 1996; Schmitt, 1997 and 2000). Metacognitive strategies involve the planning and organisation of learning, what some language learning strategy (LLS) researchers have combined with the concepts of autonomy and agency to produce the term 'self-regulation' (Tseng, Dornyei, & Schmitt, 2006, Dornyei & Ryan 2015, Oxford, 2017). In terms of cognitive strategies, much of the early vocabulary learning research, both in the L1 and L2, focussed on the memorisation and retention of new words, leading to debates on the relative effectiveness of mnemonic and rote-learning strategies. Theories of depth of processing ( Craik & Lockhart, 1972; Craik & Tulving, 1975), suggest that rote-learning strategies may not be as effective as deep-learning strategies which involve more elaborate processing. Deeper strategies include forming associations with items already stored in the long-term memory (Cohen & Apeh, 1981) and using the keyword

method (Atkinson, 1975; Pressley, Levin & Miller, 1982; Levin et al, 1992; Hulstijn, 1997). Baddeley (2015) suggest that, although there are limitations to the depth of processing theory, mainly in terms of the inability to measure depth of processing, as a rule of thumb, the more elaborate the processing, the longer the retention. Moreover, strategies which involve testing rather than reviewing will increase the chance that an item will be remembered, as recalling an item leads to better retention than presenting it again (Baddeley, 2015).

The current trend within LLS research is to move away from comparing specific strategies but rather focus on the way that students orchestrate a cluster of strategies for a specific task (Nassaji, 2003, Griffiths, 2013, Cohen, 2014, Oxford, 2017). The evidence from these studies suggests that rote-learning techniques feature strongly in the VLS-repertoire of the majority of EFL learners, while associative strategies are used by few students, and those students use them rarely. A study by Cohen and Wang (2018) shows that strategies can have different functions depending on whether they are used alone, in sequence or in clusters.

### **2.3 Chinese Character Learning Strategies**

As noted by Grenfell and Harris (2015), there is a paucity of literature investigating learning strategies employed by CFL learners. The majority of the studies conducted have involved surveys to identify commonly used learning strategies by adult learners (Wang, 1998; Shen, 2005; Sung and Wu, 2011, Wang, Spencer & Xing, 2009) and young learners (Caceres-Lorenzo, 2015; Grenfell & Harris, 2015), and a few studies have focussed specifically on character learning (Yin, 2003; Shen, 2005; Sung and Wu, 2011; Grenfell & Harris, 2015; Mason and Zhang, 2017) These studies show that like EFL learners, CFL learners generally rely on rote memorisation strategies.

The reliance on rote learning is not surprising given initial training in character learning normally focusses on repeated writing of characters. Like school children in China, CFL learners are expected to spend significant time outside of the classroom on this activity. Even with the development of mobile technology which has more flexible and efficient strategies for character learning (Mason and Zhang, 2017), many learners still rely on traditional strategies such as repetition of the sound and memorising the stroke order (Kan, Owen & Bax, 2018). Learners who only depend on teachers to provide them information about Chinese learning are less likely to master the target language (Sung & Wu, 2011), while autonomous learners demonstrated better control over learning targets and learning strategies (Wang, 2016).

Understanding individual learner differences, particularly motivation, is crucial for understanding strategy use (see Rivera-Mills & Plonsky, 2007, for a review). Motivation is a complex construct and one that has been categorized and operationalized in many ways for second language acquisition research. The concept of the Ideal L2 Self (Dornyei and Ushioda, 2009) represents an individual's future vision of themselves as proficient users of the target language, the idea being that those who can imagine future success are more likely to invest the time and effort required to achieve it.

Understanding how successful learners select and apply strategies might help teachers help those who are less successful. In this context, this study seeks to answer the following questions:

- 1) What are the individual factors which influence the selection and use of strategies for the learning of Chinese characters?
- 2) What are the most used character learning strategies for students learning Chinese as a foreign language by different groups of learners?

In answering these questions, the authors aim to present a preliminary framework for strategy instruction.

### **3. Methodology**

#### **3.1 Mixed Method Research Approach**

To answer the above questions, a mixed-methods approach was adopted. Qualitative methods were used to provide rich data and an in-depth understanding of the complexities and processes involved in strategy selection and use (Marshall & Rossman, 1999; Oxford, 2017), and to build an inventory of strategies to investigate further using a survey.

#### **3.2 Qualitative Data Collection and Analysis**

Semi-structured interviews were designed to explore learners' background, language learning experience, general approach to learning characters, and the types of strategies they employed. To obtain a better understanding of learners' implementation of strategies and any cognitive and metacognitive processes involved, at the end of each interview, a think-aloud task (Ericsson & Simon, 1987) was employed.

Convenience sampling was used to include a range of learners of different levels and experience. Following full ethical approval from the authors' institution, invitations to participate in the study were e-mailed to students who had a minimum of one years' experience of learning Chinese and who were learning to read and write Chinese.

A total of twelve interviews and verbal protocols were conducted by both researchers, either face-to-face or online via Skype, and recorded using a digital voice recorder. During the interview, participants were asked to share their learning experience in general, describe their overall approach to learning characters, and the types of resources they employed. A summary of the general themes of the interviews are provided in appendix 1.

The think-aloud task required participants to learn four new two-character words. After explaining the think-aloud process, the researchers gave the participants the opportunity to practice with one unfamiliar word. Following the practice, participants were given four unfamiliar words with their meaning and pinyin (the Romanization of the Chinese characters based on their pronunciation) and asked to memorise them following their usual study procedures. The process was audio-recorded, and the researchers took observational notes.

Immediately following the think-aloud task, the researchers encouraged participants to reflect on the process and probed them on various stages of the process. The verbal protocol, including instructions and example probes, is shown appendix 1. Participants were given the opportunity to ask the researchers questions before and after the interview and were also offered an opportunity for a follow-up interview to discuss any changes they had made to their approach to learning between interviews. Three participants accepted. The duration of

the interviews and verbal protocols varied from approximately 40 minutes to one hour. After each interview and think-loud protocol, the data were transcribed.

The data were analysed Independently by the two researchers to Identify key themes relating to factors influencing learners' selection and implementation of strategies. Appendix 2 provides a summary of the twelve learners' backgrounds in terms of experience of studying Chinese, approximate proficiency level and first language. The findings demonstrated four key factors which influenced the participants' choice and application of character learning strategies: learners' self-perceived learning styles, perceived effectiveness of strategies, attitude to technology and individual learning goals. These findings are discussed in more detail in section 5. A four-step process was identified in learning new characters: familiarization, memorization, recording and reviewing. These were included in the categorization of strategies for the questionnaire.

### **3.3 Quantitative Data Collection and Analysis**

#### **3.3.1 Questionnaire Design**

The survey was divided into four main sections. Section 1 included demographic questions such as age, gender, nationality and mother tongue, as well as questions about proficiency level and reasons for learning Chinese. Section 2 focused on strategy use, employing insights from the qualitative research to build on previously published instruments (Shen, 2005 & Mason and Zhang, 2017), and using the literature on strategy taxonomy to inform the organisation (Schmitt, 1997 and 2000). A total of 78 strategies were included in the inventory: familiarization (18), memorization (33), recording (3), reviewing (11), planning and organising (7), social (6). Oxford's (1990) five-point scale was used to determine learners' frequency of use: 1=Never or almost never true of me, 2=Rarely true of me, 3=Somewhat true of me, 4=often true of me, 5=Always or almost always true of me. Section 3 was designed to identify learners with a strong visual learning style and used five items from the Perceptual Learning Style Preference Questionnaire (Cohen, Oxford and Chi, 2001 and Reid, 1984). Section 4 was designed to measure motivation in terms of 'Ideal L2 Self' using 5 items based on Dornyei and Chan (2013). The questionnaire was created using Jisc Online Survey.

#### **3.3.2 Pilot Study**

In December 2018, students in a university in China were invited to complete the pilot survey. Ten students completed the survey and no issues were identified.

#### **3.3.3 Survey Distribution**

In 2019, the survey link was distributed via two means. Firstly, it was shared via the Pleco Newsletter. Pleco is a Chinese dictionary app identified as widely used by learners of Chinese (Mason and Zhang, 2017). Secondly, staff at UK universities offering Mandarin Chinese instruction were invited to help distribute the questionnaire to their students, five agreed to do so. In total, 107 responses were received, and since the pilot survey was unchanged, the 10 responses from the pilot were included in the final analysis to give a total of 117 responses. However, as 20 respondents acknowledged that they were not currently active in learning to read and write Chinese characters, they were excluded from the analysis giving a final sample size of 97.

### 3.3.4 Analysis

Statistical analysis software SPSS was used to analyse the survey data. Some of the raw data were re-coded to enable analysis. Respondents had self-reported their reading proficiency levels according to 8 level descriptors adapted from the CEFR self-assessment descriptors for English (Council of Europe). These ranged from complete beginner to proficiency. Due to the relatively small proportion of respondents in the lowest and highest groups, the data were collapsed into three new groups: beginner, intermediate and advanced as summarised in figure 1.

Self-reported levels	Re-coded level
Zero to Post-beginner	Beginner
Pre-intermediate to Upper-intermediate	Intermediate
Advanced to Proficient	Advanced

*Figure 1 - Recoding of reading proficiency levels*

The five items measuring Ideal Future L2 self were collapsed into one variable 'Ideal L2 Self', and then data were re-coded into two groups, those with low motivation (scoring 1-3 on the scale) and high motivation (scoring 4-5). Twenty-one strategies were identified which were either deemed to require deeper processing through the formation of associations, and/or involved recall. These were combined into one variable called mnemonic strategies, shown in the full strategy inventory (appendix 3). Learners were grouped as high (4-5), medium (3-3.9) and low (1-2.9) in terms of visual learning style.

SPSS was used to generate descriptive statistics demonstrating the most used strategies by proficiency level, and inferential tests were performed to investigate potential differences between groups.

## 4. Findings

### 4.1 Demographics

Twelve participants took part in the interviews and think aloud. The majority were L1 speakers of English, and their levels ranged from post-beginner to advanced. The full list of participants can be seen in appendix 2.

The majority of the 97 survey respondents were male (n=62, 64%) and considered themselves as bilingual or multilingual (n=63, 65%). Ages ranged from 18 to over 80 years, with the majority in the 18 to 25 age group (n=37, 38 %) but a significant proportion aged 46 years or over (n=31, 32%). Respondents reported 24 different nationalities (24), and a broad diversity of linguistic backgrounds (20 different mother tongues). Some learners had been learning Chinese for less than a year (n=14, 14 %) while others had been learning for more than 10 years (n=27, 27 %). Most respondents received the survey link via the Pleco Newsletter (n=60, 62 %), 36 from a teacher (37 %) and one from a friend. In terms of reading proficiency, 16 % (n=16) of respondents were beginners, 65 % (n=63) were intermediate level, and 19 % (n=18) were classified as advanced. Most respondents (n=61, 62 %) agreed that they needed to be able to handwrite characters. Moreover, 85 respondents (88 %) agreed that being able to handwrite characters from memory helped them to recognise characters

more easily. The writing goal most important to the sample was being able to send text messages to friends and family on their phones with 79 respondents (82 %) agreeing they wanted to be able to do this.

In terms of their level of motivation, students scored highly on the measure of Ideal L2 self (mean=4.03, median=4, mode=4, SD=0.716), confirming that this self-selected sample were indeed highly motivated. The fact that the respondents are intrinsically motivated is supported by the fact that the most common reasons given for starting to learn Chinese were interest in the Chinese language (n=39, 42%) and interest in the Chinese culture (n=11, 11 %).

Seventy-two of the respondents were able to compare their reading and writing ability with their peers, with the majority (n=63, 88%) rating themselves as average or above average (n=63), and only 9 respondents (12 %) rating themselves as below average.

These learners relied heavily on learning apps to learn Chinese characters, with only 3 respondents never using apps to support their learning, and most respondents (n=79, 77 %) using apps some or most of the time. They had a positive attitude to using apps for character learning in relation to enjoyment (mean=4.12, median=4, mode=4, SD 0.78), efficiency (mean=3.74, median=4, mode=3.5, SD 0.85), and flexibility (mean=4.45, median=4.5, mode=5, SD 0.69). The 3 respondents never using apps were in the age groups 18-25, 26-35 and 80 or over. The most active app users were across all age groups.

## **4.2. What Are the Individual Factors Which Influence the Selection and Use of Strategies for the Learning of Chinese Characters?**

In answer to research question 1 above, the findings of the qualitative analysis revealed four key factors: self-perceived learning styles, attitudes to technology, perceived effectiveness of strategies, learner goals, curriculum and environment. Each factor is summarised and illustrated below. The findings of the quantitative analysis are presented in section 4.3.

### ***4.2.1 Self-Perceived Learning Styles***

Although not prompted during the interview, four participants identified themselves as being a particular type of learner and discussed how that impacted their approach to character learning. This is best illustrated by P5 referred to herself twice as a ‘*verbal*’ learner and gave this as her reason for finding listening in Chinese easier than reading and writing. She stated twice that she was not a ‘*visual*’ learner and believed this was the main reason that she had ‘*always struggled*’ with writing, because in her words, ‘*you need to be a little bit visual in Chinese*’.

Throughout the interview and post-observation reflection, there was a strong sense of her struggle to overcome this perceived weakness. There was also frustration stemming from negative classroom experiences: she had initially tried to memorise the characters by writing them out repeatedly because that was what her peers did.

P11, the most advanced learner and proficient reader in the sample, appeared to be a strong visual learner. During the interview she says:

*I think my brain does work in pictures. So when we were finding scripts in the bible, I would not remember what chapter, but I can remember where about on the page it is.*

In terms of learning strategies, P11 mainly employed strategies relevant to her prime motivation, for example, reading Bible chapters in Chinese and checking the dictionary for the pronunciation and meaning of words and characters, listening to others reading the Bible and following them. At the beginning of her studies, P11 used traditional flashcards to help recognise characters. As an advanced learner who can recognize many Chinese characters already, she manages to learn new characters with relative ease.

P12 referred to himself as a '*practical learner*', which signified that he learns better through communication. He believed he was improving his Chinese by engaging in authentic communication. When he first learnt Chinese at university, he learned through repetition and flashcards because he was taught to do so. However, he found these methods ineffective and uninspiring. His preference for '*learning through use*' was evident in his description of how he frequently used WeChat for business and social purposes.

P5 showed a strong preference for social strategies. Peers and Chinese friends were often mentioned in relation to her strategy use. For example, her desire to communicate with others is exemplified in the quotation below:

*I have a friend who has kind of become my Chinese dictionary. If I get a new word, I will send it to my friend and ask for a few sentences, then I will try to memorise that sentence.*

### ***Attitudes to Technology***

P4 and P5 had contrasting attitudes to technology. Technology, particularly games, featured strongly in P5's repertoire. She had abandoned repetitive character writing because she felt it '*was too boring*', instead, spending time exploring online resources. Describing herself as a '*nineties*' child', that is a digital-native, she found electronic learning '*more mentally stimulating*' so she can stay '*more focused longer*'.

P4, although a similar age to P5, did not enjoy using technology.

*I did try to do flashcards on my iPad, but I prefer to have things in my hand, I'm not a big one on technology, it's just a personal preference.*

P3 also embraced technology when he became aware of it, moving from traditional paper-based materials to a dictionary app which allowed him to create his own flashcards from the textbook and practice them '*anytime, anywhere*'.

### ***Learning Goals, Curriculum, and Environment***

The influence of learning goals and curriculum are best demonstrated by P11, P9 and P2. Neither P9 nor P11 needed to learn to handwrite characters so their focus was on recognition rather than production. P11 was the most advanced learner interviewed and was able to read the Bible in Chinese, but was not good at handwriting.

P9 was at the beginning of his learning journey when interviewed. When he had first started learning Chinese, he had spent a lot of time repeat-writing characters. However, when his current teacher had removed handwriting from the curriculum, he stopped practising writing. P2 also changed her strategies to reflect her learning goals. She noted that she had adopted a

new strategy to meet her short-term learning goal of passing the Chinese Proficiency Exam, HSK 3.

Learning environment, particularly whether learners are studying in the target language community or not, had an impact on strategy use. P3, for example, noted that while he was in China, he was meeting 30-40 new characters every day, but these were taught and practised in class, so self-study time was spent doing exercises and reviewing what had been done in class rather than focussing specifically on character learning.

### ***Perceived Effectiveness of Strategy Use***

A few participants changed their strategy use according to their perceived effectiveness while the majority seemed to repeat behaviours out of habit. P2 was continuously seeking ways to improve her learning effectiveness. As noted above, she changed her strategies to meet a new learning goal but also when she believed current strategies to be ineffective.

*I used to train by just rewriting the characters over and over again and that seemed to work pretty well but this summer I discovered that if I have a text with the characters I want to learn if I rewrite the text there is a much bigger chance that I actually remember the characters because I can understand them in a context.*

P3 and P9 utilised the interviews to reflect on their current strategies and seek advice on improvement. But, like several of the participants, P4 had relied on a particular strategy throughout her Chinese learning journey because this was how she was taught by her teacher, and as she observed:

*I just do it that way because I have always done it that way.*

### **4.3 What Are the Most Used Character Learning Strategies for Students Learning Chinese as a Foreign Language by Different Groups of Learners?**

The most used strategies by respondents overall, and by each proficiency level are shown in figures 2 to 5.

Strategy	Mean score
When I am not sure of a word or character's meaning, I look it up in my textbook or dictionary.	4.44
I try to identify characters I know whenever I see any writing in Chinese, for example a sign or advertisement.	4.42
I pay attention to how the word or character is used in context.*	4.25
I check the word or character in the dictionary to see other meanings and how it is used.*	4.09
I pay attention to the tone and try to associate the sound with pinyin.*	3.96
I actively seek out reading materials in Chinese such as children's stories, blogs, news stories.	3.89
I try to recognize the radicals that I have already learned.	3.88

I use a reading app with a built-in glossary (e.g. Pleco Clipboard Reader, Decipher) so that I can learn new words in context	3.88
I watch films and song videos with Chinese subtitles and try to read the characters.	3.81
I see what radicals are in the character and try to make sense of why they are there.	3.80

*Figure 2 - Ten most used strategies*

\* Represents strategies with statistical difference between proficiency levels

I pay attention to the tone and try to associate the sound with pinyin.	4.25
When I am not sure of a word or character's meaning, I look it up in my textbook or dictionary.	4.17
I use an app or online resource to keep a record or 'history' of new characters and words.	4.08
I say the word or character or word several times aloud or silently to myself.	4.08
I use an electronic dictionary or other resource to listen to the pronunciation of the word or character.	4.08
When I am not sure about the stroke order of a character, I use an animation app or online resource to check.	4.00
I use flashcards (electronic or traditional) to test my recognition of new words and characters.	3.92
I try to identify characters I know whenever I see any writing in Chinese, for example a sign or advertisement.	3.83
I pay attention to how the word or character is used in context.	3.83
I use flashcards (electronic or traditional) to review (rather than test) new characters.	3.67
I use flashcards (electronic or traditional) to test myself on the tones.	3.67
I check the word or character in the dictionary to see other meanings and how it is used.	3.67
I see what radicals are in the character and try to make sense of why they are there.	3.67

*Figure 3 - Most used strategies by beginner learners*

I try to identify characters I know whenever I see any writing in Chinese, for example a sign or advertisement.	4.55
When I am not sure of a word or character's meaning, I look it up in my textbook or dictionary.	4.45
I pay attention to how the word or character is used in context.	4.22
I use a reading app with a built-in glossary (e.g. Pleco Clipboard Reader, Decipher) so that I can learn new words in context	4.11
I check the word or character in the dictionary to see other meanings and how it is used.	3.98
I actively seek out reading materials in Chinese such as children's stories, blogs, news stories.	3.94
I try to recognize the radicals that I have already learned.	3.91
I break down the character into smaller components.	3.88
I pay attention to the tone and try to associate the sound with pinyin.	3.83
I translate the word to my own native language and find an equivalent in meaning.	3.83

*Figure 4- Most used strategies by intermediate learners*

I check the word or character in the dictionary to see other meanings and how it is used.	4.74
I pay attention to how the word or character is used in context.	4.63
When I am not sure of a word or character's meaning, I look it up in my textbook or dictionary.	4.58
I try to identify characters I know whenever I see any writing in Chinese, for example a sign or advertisement.	4.37
I actively seek out reading materials in Chinese such as children's stories, blogs, news stories.	4.21
I pay attention to the tone and try to associate the sound with pinyin.	4.21
I use flashcards (electronic or traditional) to review (rather than test) new characters.	4.11
I use an app or online resource to keep a record or 'history' of new characters and words.	4.00
I watch films and song videos with Chinese subtitles and try to read the characters.	3.95
I try to recognize the radicals that I have already learned.	3.95

Figure 5 - Most used strategies by advanced learners

After generating the ten most common strategies, One-Way ANOVAs were performed to determine any statistical differences between levels. Differences were identified in three of the strategies highlighted with an asterisk in table 2 and the results of the ANOVAs are shown in figures 6 to 11.

#### ANOVA

I pay attention to the tone and try to associate the sound with pinyin.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.763	2	5.381	5.554	.005
Within Groups	91.072	94	.969		
Total	101.835	96			

Figure 6

#### Multiple Comparisons

Dependent Variable: I pay attention to the tone and try to associate the sound with pinyin.

LSD

(I) Q18new	(J) Q18new	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
beg	int	.723*	.276	.010	.18	1.27
	adv	.049	.338	.886	-.62	.72
int	beg	-.723*	.276	.010	-1.27	-.18
	adv	-.675*	.263	.012	-1.20	-.15
adv	beg	-.049	.338	.886	-.72	.62
	int	.675*	.263	.012	.15	1.20

\*. The mean difference is significant at the 0.05 level.

Figure 7

### ANOVA

I pay attention to how the word or character is used in context.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.601	2	2.301	3.862	.024
Within Groups	55.399	93	.596		
Total	60.000	95			

Figure 8

### Multiple Comparisons

Dependent Variable: I pay attention to how the word or character is used in context.

LSD

(I) Q18new	(J) Q18new	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
beg	int	-.367	.216	.093	-.80	.06
	adv	-.736*	.265	.007	-1.26	-.21
int	beg	.367	.216	.093	-.06	.80
	adv	-.369	.207	.077	-.78	.04
adv	beg	.736*	.265	.007	.21	1.26
	int	.369	.207	.077	-.04	.78

\*. The mean difference is significant at the 0.05 level.

Figure 9

### ANOVA

I check the word or character in the dictionary to see other meanings and how it is used.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.387	2	4.193	5.147	.008
Within Groups	75.770	93	.815		
Total	84.156	95			

Figure 10

### Multiple Comparisons

Dependent Variable: I check the word or character in the dictionary to see other meanings and how it is u  
LSD

(I) Q18new	(J) Q18new	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
beg	int	-.440	.253	.086	-.94	.06
	adv	-.986*	.310	.002	-1.60	-.37
int	beg	.440	.253	.086	-.06	.94
	adv	-.547*	.242	.026	-1.03	-.07
adv	beg	.986*	.310	.002	.37	1.60
	int	.547*	.242	.026	.07	1.03

\*. The mean difference is significant at the 0.05 level.

Figure 11

To test the hypothesis that highly visual learners would use more mnemonic strategies than less visual learners, a One-Way ANOVA was conducted providing evidence to support this. The findings are shown in figures 12 to 14.

### Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
low visual	9	2.6085	.66785	.22262	2.0951	3.1218	1.81	3.48
medium visual	44	3.0271	.62210	.09378	2.8379	3.2162	1.90	4.43
high visual	33	3.3766	.81809	.14241	3.0865	3.6667	1.90	5.00
Total	86	3.1174	.73990	.07979	2.9588	3.2760	1.81	5.00

Figure 12

### ANOVA

Mnemonic strats	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.908	2	2.454	4.893	.010
Within Groups	41.626	83	.502		
Total	46.534	85			

Figure 13

## Multiple Comparisons

Dependent Variable: Mnemonic strats

LSD

(I) visualgroups	(J) visualgroups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
low visual	medium visual	-.41859	.25908	.110	-.9339	.0967
	high visual	-.76816*	.26631	.005	-1.2978	-.2385
medium visual	low visual	.41859	.25908	.110	-.0967	.9339
	high visual	-.34957*	.16308	.035	-.6739	-.0252
high visual	low visual	.76816*	.26631	.005	.2385	1.2978
	medium visual	.34957*	.16308	.035	.0252	.6739

\*. The mean difference is significant at the 0.05 level.

*Figure 14*

## 5. Discussion

The qualitative data revealed four key factors that influenced the selection and use of strategies and the most used strategies employed by different levels of highly motivated learners were identified using a survey. The combined findings are discussed below to provide a set of principles alongside a strategy inventory to guide instruction.

### 5.1 The Influence of Learners' Self-Perceived Learning Style and Perceived Effectiveness

The qualitative data showed that several participants selected strategies which best suited their perceived learning styles, or perhaps more accurately their learning preferences, providing further support for the assertion that *'language learning and use strategies do not operate in a vacuum, but rather are directly tied to learners' underlying learning style preferences'* (Cohen, 2012: 142). P11, a highly visual learner, appeared to learn new characters with ease. As Shen (2010) has shown, visual imagery can help learners' retention of Chinese vocabulary. Those students who do not naturally employ this technique are likely to struggle reading Chinese unless their visual skills can be enhanced (Chen et al, 2014) as demonstrated by P5. The quantitative analysis also provided some evidence that highly visual learners adopt more mnemonic strategies than less visual learners. Since these types of strategies are likely to lead to longer retention (Baddeley, 2015), they should be encouraged among all learners. Strategy researchers have been calling for teachers to encourage 'style-stretching' for some time (Nel, 2008; Wong & Nunan, 2011). For this to be most effective, teachers need an awareness of students' learner preferences. Gregersen and MacIntyre (2014) set out five principles to raise teacher awareness of style issues as well as providing classroom activities which may make classes more productive and enjoyable for both students and teachers (Cohen, 2012).

Two respondents who were relative beginners, used the research interviews as an opportunity to reflect on their approach and explore different strategies. If P5 had received such an intervention in the early stages of her learning journey, she may have been able to overcome some of the character learning challenges. Several participants appeared to have continued

using the same strategies throughout their learning journey out of habit rather than because they felt they were effective. The survey data revealed that few learners were regularly using strategies to plan and organize their learning although the most used strategy was '*I change my use of strategies whenever I think they are not helping me to learn as effectively as I would like.*' Providing learners with opportunities '*to reflect on and question their own learning behaviour*' (Moir and Nation, 2008:171) may lead to better outcomes over time (Nunan, 1995).

## **5.2 Attitudes to Technology**

The qualitative data showed that many students were embracing technology to make their learning more fun and convenient. The quantitative data also revealed a positive attitude to mobile technology in terms of enjoyment, efficiency and flexibility. Gamification has been shown to increase both engagement and performance in Mandarin language learning amongst young learners (Ng et al 2022) and as large language models improve, the potential for language learning technology seems limitless. However, teachers cannot assume that all learners will favour using technology over traditional methods, nor that they will know how to fully exploit them (Mason & Zhang, 2017). Instead, they can encourage students to share their experiences of using the variety of available resources and provide training to support their effective use.

## **5.3 Learning Goals and Learning Environment**

Some of the interview participants adapted their strategies to meet changing goals and environments. Teachers therefore need to consider this in relation to strategy instruction and teaching more widely. Although technological developments mean that many students no longer need to be able to handwrite characters, the survey results showed that learners still understood that being able to write characters enabled better recognition.

## **5.4 Limitations of the Study**

There are several limitations of this study. The sample was relatively small and self-selected, so this cannot be generalized to larger populations of Chinese learners. Both the interviews and survey relied on self-reported success, so further experimental research investigating the use of different types of strategies which measure performance and retention over time would be valuable.

## **5.5 Pedagogical Implications**

The study has provided an inventory of strategies (see appendix 4) which teachers and learners can select from, focussing initially, but not exclusively, on the ones most used in the appropriate level by the highly motivated students in this study. A provisional framework for strategy instruction is summarized in figure 15 based on the findings discussed above.

Level	Key focus	Example skills and strategies
Beginner	<p>Introduce technology/tools</p> <p>Develop visualization and association techniques</p> <p>Encourage style-stretching (Gregersen and MacIntyre , 2014)</p>	<p>When I am not sure about the stroke order of a character, I use an animation app or online resource to check.</p> <p>I say the word over to myself and try to picture what the characters look like in my mind. (visualisation and association)</p> <p>I try to make a story from the components of the character or word. (association)</p>
Pre-intermediate	<p>Encourage mnemonic and recall strategies over rote-learning</p> <p>Develop metacognitive strategies and knowledge sharing</p>	<p>I try to associate the sound of the character with its shape and meaning.</p> <p>I use flashcards (electronic or traditional) to test myself on the tones.</p> <p>I change my use of strategies whenever I think they are not helping me to learn as effectively as I would like.</p> <p>I discuss with other students different methods for learning new characters.</p>
Intermediate onwards	Encourage regular reflection and discussion	I discuss with other students different methods for learning new characters.

*Figure 15 - Framework for Instruction*

## 6. Conclusion

The findings of this study have provided an inventory of strategies and a preliminary framework for instruction guided by several principles. Firstly, visualization, association and recall techniques should be encouraged over rote-learning and review techniques. Secondly teachers should consider individual preferences but encourage ‘style-stretching’. Thirdly, teachers and learners should explore the use of various technologies together and share their experience and knowledge. And finally, learners need regular opportunities to reflect on their learning and its effectiveness.

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## **Appendices**

### **Appendix 1 - Interview and Think-aloud Protocol**

#### **Background Questions**

How long have you been learning Chinese?

How would you assess your level of Chinese?

What do you find are the most difficult aspects of learning Chinese?

#### **Main Questions**

When you have to learn a new word or character in Chinese, can you describe the usual process that you go through?

What do you do to memorize the new word?

How do you review the word?

Why do you do it like this?

Has your approach to learning new words and characters changed over time?

#### **Think-aloud protocol:**

##### **Step 1 – check for unfamiliar words**

##### **Step 2 – Introducing task**

I am going to give you the meanings and pinyin of four unfamiliar words and then I ask you to memorize them. Try to do what you would normally do when you learn new words in Chinese. You can use any tools or resources that you like such as a dictionary or app. Have you got all the materials that you need? While you are memorizing them. I would like you to say out loud what you are doing and thinking.

##### **Step 3 – checking instructions and practice example**

Let's do an example – imagine you have to learn this new word (show word, meaning and pinyin) – try to learn it now and say out loud what you are doing and thinking. (prompt as necessary).

##### **Step 4 – task**

Do you have any questions? Are you ready? Let's start. Here are the words and their meanings.

##### **Step 5: Post-task reflection**

How did you feel doing this? Did it reflect what you normally do? What did you do differently? Were there any steps or processes that you followed that you didn't say out loud? You were given four new words to learn, how many do you normally try to learn in one go?

Is there anything else you want to say about how you learn Chinese characters or your experience today?

Thank you very much for taking part.

## Appendix 2 – Interview Participants

Participant ID	Gender	Experience	Approximate Level	Mother Tongue
P1	Female	Learning Chinese as a hobby for 15 years	HSK 3	English
P2	Female	Completed first year of degree in Chinese	HSK 2/3	Czech/English
P3	Male	1 year studying Chinese as a 'hobby' and for business,	HSK 1	Italian
P4	Female	Chinese graduate living in UK	HSK 5	English
P5	Female	Graduate in Chinese living in China	HSK 5	Lingala/French
P6	Male	Graduate in Chinese living in China	HSK 4	English
P7	Male	Learning Chinese as a hobby/work interest	HSK 2	English
P8	Male	Graduate in Chinese living in UK	HSK 4/5	English
P9	Male	Completed first year of degree in Chinese	HSK 2	English
P10	Female	Graduate in Chinese teaching primary Chinese	HSK 5	English
P 11	Female	Learning Chinese for religious purposes	HSK 5/6	English
P 12	Male	Graduate in Chinese, running export (to China) company in Spain,	HSK 3/4	Bilingual Spanish/English

## Appendix 3 - Complete Strategy Inventory

\* denotes characters identified as mnemonic

### Familiarisation

	N	Mean
When I am not sure of a word or character's meaning, I look it up in my textbook or dictionary.	96	4.44
I check the word or character in the dictionary to see other meanings and how it is used.	96	4.09
I pay attention to how the word or character is used in context. *	96	4.25
I see if the character in a new word has been used in words or phrases I have previously learned. *	97	3.76
I use a reading app with a built-in glossary (e.g. Pleco Clipboard Reader, Decipher) so that I can learn new words in context	97	3.88
When I don't fully understand a word or character, I ask someone (e.g. a teacher, classmate or friend) how it could be used in different sentences.	96	3.00
I try to find sentences with the new characters from a dictionary or my text book.	96	3.52
I translate the word to my own native language and find an equivalent in meaning.	96	3.67
I use an electronic dictionary or other resource to listen to the pronunciation of the word or character.	97	3.55
I try to recognize the radicals that I have already learned.	97	3.88
I see what radicals are in the character and try to make sense of why they are there.	97	3.80
If I cannot identify the radical of a new character, I use an electronic dictionary or other resource to do so.	96	3.57
I look carefully at the strokes and try to make associations with a similar character (or word) I have previously learned. *	97	3.55
I look at the character and try to work out the stroke order.	96	3.29
When I am not sure about the stroke order of a character, I look it up in my textbook.	96	2.41
When I am not sure about the stroke order of a character, I use an animation app or online resource to check.	97	3.49
I break down the character into smaller components.	95	3.78
I use online resources to see the oracle bone or other ancient object inscription.	88	2.23
Valid N (listwise)	86	

### Memorisation

	N	Mean
I pay attention to the tone and try to associate the sound with pinyin.	97	3.96
I say the word or character or word several times aloud or silently to myself.	97	3.78
I try to visualize the character in my mind.	97	3.52
I try to associate the sound of the character with its shape and meaning. *	96	3.22
I listen to the pronunciation of the word or character and think of the meaning. *	96	3.27

I listen to the pronunciation of the word or character and try to visualise the character(s). *	97	3.00
I say the word out loud and try to associate the sound with the meaning. *	96	3.28
I say the word out loud and try to associate the sound with the shape of the character. *	96	2.83
I memorize the sound first then the meaning and the shape.	95	2.88
I try to make a story from the components of the character or word. *	96	2.45
I write the word repeatedly focussing only on the stroke order or shape of the character.	97	3.29
I usually say the word or character to myself, out loud or silently, as I write it out repeatedly.	96	3.35
I count the strokes as I repeatedly write out the character or word.	97	2.05
As I write the word or character repeatedly, I think about the story or smaller components I have created. *	96	2.42
I say the word over to myself and try to picture what the characters look like in my mind. *	97	3.07
I watch animations of the stroke order to memorise the strokes.	96	2.52
I watch animations of the stroke order and copy with my fingers or hand at the same time.	96	2.65
I watch animations of the stroke order and try to predict the next stroke.	95	2.56
I watch animations of the stroke order while counting the number of strokes.	95	1.97
I use flashcards (electronic or traditional) to test my recognition of new words and characters. *	97	3.70
I use flashcards (electronic or traditional) to test myself on the tones. *	96	3.18
I use flashcards (electronic or traditional) to see if I can write the characters from memory. *	96	3.33
I associate the new character with previously learned radicals to find connections among sound, shape, and meaning. *	97	3.65
I classify the words into different categories according to their meaning. *	97	2.80
I group the words with similar features such as similarity in meaning, sound, or shape. *	97	2.89
I use my imagination to picture the meaning that the character represents, as if each character is a picture. *	94	2.78
I compare the new character with other characters I have learned to try to find similarities or differences in shape. *	97	3.64
I memorize the shape of the character first, then the pronunciation.	97	3.11
I quiz myself during memorization; for example, given the sound, I try to think of the character's shape and meaning. *	96	3.13
I memorize the characters (or words), then have someone test me.	97	2.15
I use an app to provide me with 'mems' – ways of memorising a character.	95	2.29
I create my own 'mems' (mnemonics) to help me memorise a character. *	97	2.36
I memorize phrases or whole sentences that contain the new word.	96	2.96
Valid N (listwise)	90	

## Recording

	N	Mean
I write the character (or word) down in a notebook.	97	3.44
When I record a new word, I write down example sentences which contain the new word.	97	2.89
I use an app or online resource to keep a record or 'history' of new characters and words.	97	3.78

Valid N (listwise)	97
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## Review

	N	Mean
I use flashcards (electronic or traditional) to review (rather than test) new characters.	97	3.66
I review characters by writing out sentences or texts which contain the characters.	97	2.75
I try to review new words and characters every day or every other day	97	3.47
I only review new words and characters before class tests and exams.	96	1.86
I review new words and characters by going over (not testing) my flashcards (electronic or traditional) whenever I have time during the day.	97	2.96
I review new words and characters by using flashcards (electronic or traditional) to test myself whenever I have time during the day.	97	3.36
I review new words and characters by writing them out many times.	96	3.07
I review new words and characters by asking someone to test me.	96	1.77
I review new words and characters by reading over notes, example sentences, and the lesson in the textbook.	96	3.24
I review new words and characters by reading texts that contain them.	96	3.52
I write new characters or words on my hand so I can review them regularly.	93	1.85
Valid N (listwise)	91	

## Planning and Organising Strategies

	N	Mean
I discuss with other students different methods for learning new characters.	96	2.04
I do my homework first before memorizing the characters, since often I have to write out many of the characters in my homework.	96	2.31
I select different strategies according to the difficulty of the character.	97	2.67
I always study at certain times of the day when I know I learn best.	97	2.42
I plan my learning of new characters on a weekly basis.	97	2.39
I regularly reflect (at least once every 3 months) on how effective my strategy use is.	96	2.38
I change my use of strategies whenever I think they are not helping me to learn as effectively as I would like.	96	2.96
Valid N (listwise)	95	

## Social Strategies

	N	Mean
I try to use new words in everyday writing activities such as shopping lists, emails or social media.	97	2.98
I try to use new words and characters when I speak to classmates or Chinese-speaking friends and family.	97	3.24

I try to identify characters I know whenever I see any writing in Chinese, for example a sign or advertisement.	97	4.42
I watch films and song videos with Chinese subtitles and try to read the characters.	97	3.81
I actively seek out reading materials in Chinese such as children's stories, blogs, news stories.	97	3.89
When I hear a word that I did not know, I ask the speaker to write it down for me.	97	2.76
Valid N (listwise)	97	

## References

- Alderson, C. (2005). *Diagnosing Foreign Language Proficiency: The Interface Between Learning and Assessment*. London: Continuum.
- Ahmed, M.O. (1989). Vocabulary learning strategies. In P. Meara (Ed) *Beyond Words*, London: CILT, 3-14.
- Atkinson, R. C. (1975). Mnemotechnics in second language learning. *American Psychologist*, 30, 821–828.
- Baddeley, A. (2015). Learning. In Baddeley, A. Eysenck, M.W. and Anderson, M.C. (2015) *Memory*. London: Psychology Press.
- Caceres-Lorenzo, M.T. (2015). Teenagers learning Chinese as a foreign language in a European Confucius Institute: the relationship between language learner strategies and successful learning factors, *Language Awareness*, 24:3, 255-272, DOI:10.1080/09658416.2015.1075544
- Chen, M., Wang, L., Chen, H., & Chen, Y. (2014). Effects of type of multimedia strategy on learning of Chinese characters for non-native novices. *Computers & Education*, 70, 41-52. DOI:10.1016/j.compedu.2013.07.042
- Cohen, A. (1990). *Language Learning: Insights for Learners, Teachers and Researchers*. New York: Newbury House.
- Cohen, A. (2012). Strategies: the interface of styles, strategies and motivation on tasks. In Mercer, S., Ryan, S. and Williams, M. (eds) *Psychology for Language Learning: Insights from Research, Theory and Practice*. Basingstoke: Palgrave Macmillan, 136-150.
- Cohen, A. (2014) *Strategies in Learning and Using a Second Language*. London: Routledge.
- Cohen, A. D., & Aphek, E. (1981). Easifying second language learning. *Studies in Second Language Acquisition*, 3, 221–236.
- Cohen, A. and Dornyei, Z. (2002). focus on the language learner: motivation, styles and strategies. In Schmitt, N. (ed.) *An Introduction to Applied Linguistics*, London Arnold, 170-190.
- Cohen, A. and Wang, I.K. (2018). Fluctuations in the functions of language learner strategies. *System*, 74, 169-182.
- Council for Europe (2001) Common European Framework of Reference for Languages (CEFR) Self- Assessment grid for English. Available online at: <https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=090000168045bb52>
- Craik, F.I.M. and Lockhart, R.S. (1972). Levels of Processing: A Framework for Memory Research. *Journal of Verbal Learning and Verbal Behavior* 11, 671-684.

- Craik, F.I.M and Tulving, E. (1975). Depth of Processing and the Retention of Words in Episodic Memory. *Journal of Experimental Psychology*, 104/3, 268-294.
- Dornyei and Chan (2013). Motivation and vision: an analysis of future L2 Self Images, Sensory Styles, and Imagery capacity across two target languages. *Language Learning* 63/3 437-462.
- Dornyei, Z. and Ryan, S. (2015). *The Psychology of the Language Learner Revisited*. London: Routledge.
- Dornyei, Z and Ushioda, E (eds) (2009). *Motivation, Language Identity and the L2 Self*. Bristol: Multilingual Matters.
- Ehrich, J., Zhang, L.J., Mu, J.C. and Ehrich, L.C. (2013). 'Are alphabetic language-derived models of L2 reading relevant to L1 logographic background readers?' *Language Awareness* 22/1, 39-55.
- Ericsson, A. & Simon, A. (1987). Verbal Reports on Thinking, in Faerch and Kasper (eds), *Introspection in Second Language Research*. Clevedon Philadelphia: Multilingual Matters, 24-53.
- Grenfell, M., & Harris, V. (2015). Memorisation strategies and the adolescent learner of Mandarin Chinese as a foreign language. *Linguistics and Education*, 31, 1-13. DOI:10.1016/j.linged.2015.04.002
- Gregersen & MacIntyre (2014). *Capitalizing on Language Learners' Individuality: from Premise to Practice*. Bristol: Multilingual matters.
- Griffiths, C. (2013). *The Strategy Factor in Successful Language Learning*. Bristol: Multilingual Matters.
- Gu, Y., & Johnson, R. K. (1996). Vocabulary learning strategies and language learning outcomes. *Language Learning*, 46, 643–697.
- Hanban (2019). Chinese Proficiency Test: HSK, [http://english.hanban.org/node\\_8002.htm#no1](http://english.hanban.org/node_8002.htm#no1)
- Hu, B. (2010). The challenges of Chinese: a preliminary study of UK learners' perceptions of difficulty. *The Language Learning Journal*, 38(1), 99-118. DOI:10.1080/09571731003620721
- Hulstijn, J. H. (1997). Mnemonic methods in foreign language vocabulary learning. In J. Coady & T. Huckin (Eds.), *Second Language Vocabulary Acquisition* (pp. 203–224). Cambridge: Cambridge University Press.
- 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 (2018): 56-71. DOI:10.1080/17501229.2018.1418633

- Krashen, S. (1989). We acquire vocabulary and spelling by reading: Additional evidence for the input hypothesis. *The Modern Language Journal*, 73, 440-464.
- Levin, J. R., Levin, M. E., Glassman, L. D., & Nordwall, M. B. (1992). Mnemonic vocabulary instruction: Additional effectiveness evidence. *Contemporary Educational Psychology* 17, 156–174.
- Li, H., Shu, H., McBride-Chang, C., Liu, H., & Peng, H. (2012). Chinese children's character recognition: Visuo-orthographic, phonological processing and morphological skills. *Journal of Research in Reading*, 35(3), 287-307. DOI:10.1111/j.1467-9817.2010.01460
- Marshall, C., & Rossman, G. (1999). *Designing Qualitative Research*. Sage, London.
- Mason, A. and Zhang, WZ. (2017). ‘An exploration of the use of mobile applications to support the learning of Chinese characters employed by students of Chinese as a foreign language’. In Q. Kan & S. Bax (Eds), *Beyond the language classroom: researching MOOCs and other innovations*. Research-publishing.net, 99-112. DOI: 10.14705/rpnet.2017.mooc2016.674
- Moir, J. and Nation, P. (2008). Vocabulary and Good Language Learners. In C. Griffiths (ed), *Lessons from Good Language Learners*. Cambridge CUP, 159-173.
- Nassaji, H. (2003). L2 vocabulary learning from context: Strategies, knowledge sources, and their relationship with success in L2 lexical inferencing. *TESOL Quarterly*, 37, 645-6
- Nation, I.S.P. (1990) *Teaching and Learning Vocabulary*. Boston, MA: Heinle and Heinle.
- Nel, C. (2008). Learning Style and good language learners. In Griffiths, C. (ed) *Lessons from good language Learners*. Cambridge: CUP, 49-60.
- Nunan, D. (1995). Assessment and change in the classroom. In: Nunan, D., Berry, R., Berry, V. (Eds.), *Bringing About Change in Language Education*. Department of Curriculum Studies, University of Hong Kong, Hong Kong, 31-54.
- Oxford, R. (2017). *Teaching and researching language learning Strategies: self-regulation in context*. Routledge.
- Pressley, M., Levin, J. R., & Miller, G. E. (1982). The keyword method compared to alternative vocabulary learning strategies. *Contemporary Educational Psychology*, 7, 50–60.
- Rivera-Mills, S., & Plonsky, L. (2007). Empowering students with language learning strategies: a critical review of current issues. *Foreign Language Annals*, 40(3), 535–548.
- Samimy, K. K., & Lee, Y. (1997). Beliefs about language learning: Perspectives of first-year Chinese learners and their instructors. *Journal of Chinese Teachers' Association*, 32(1), 40–60.

- Schmitt, N. (1997). Vocabulary Learning Strategies. In Schmitt and McCarthy (Eds.) *Vocabulary: description, acquisition and pedagogy*. Cambridge: CUP, 199-227.
- Schmitt, N. (2000). *Vocabulary in Language Teaching*. Cambridge: CUP.
- Shen, H. (2005). An Investigation of Chinese-Character Learning Strategies among Non-Native Speakers of Chinese. *System: An International Journal of Educational Technology and Applied Linguistics*, 33(1), 49-68. DOI:10.1016/j.system.2004.11.001
- Shen, H. (2010). Imagery and verbal coding approaches in Chinese vocabulary instruction. *Language Teaching Research*, 14(4), 485-499.
- Sung, K-Y. (2011). Factors influencing Chinese language learners' strategy use, *International Journal of Multilingualism*, 8:2, 117-134, DOI:10.1080/14790718.2010.532555
- Sung, K., & Wu, H. (2011). Factors influencing the learning of Chinese characters, *International Journal of Bilingual Education and Bilingualism*, 14:6, 683-700. DOI:10.1080/13670050.2011.571658
- Takač, V.P. (2008). *Vocabulary Learning Strategies and Foreign Language Acquisition*. Clevedon: Multilingual Matters.
- Tseng, W-T, Dornyei, Z and Schmitt, N. (2006). A new approach to assessing strategic learning: the case of self-regulation in vocab acquisition. *Applied Linguistics* 27/1, pp 78-101.
- Wang, S. (1998). A study on the learning and teaching of Hanzi-Chinese characters. *Working Papers in Educational Linguistics*, 14(1), 69-101.
- Wang, D. (2016). A Narrative Research on Characteristics of Autonomous Learners of Chinese as a Foreign Language (in Chinese), *Overseas Chinese Education*, 81, 489-491.
- Wang, J., Spencer, K. & Xing, M. (2009). Metacognitive beliefs and strategies in learning Chinese as a foreign language. *System* 37/1, 46-56.
- Wong, C., & Nunan, D. (2011). The Learning Styles and Strategies of Effective Language Learners. *System: An International Journal of Educational Technology and Applied Linguistics*, 39(2), 144-163. DOI:10.1016/j.system.2011.05.004
- Yin, J. H. (2003) A questionnaire study of American students' Chinese character memorization strategies. *Journal of the Chinese Language Teachers Association*. 38 (3) 69-90.

**Contact email:** a.mason@ljmu.ac.uk