INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT

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ISSN: 2226-6348

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To Link this Article: http://dx.doi.org/10.6007/IJARPED/v11-i3/15281 DOI:10.6007/IJARPED/v11-i3/15281

Received: *14* July 2022, ***Revised:*** *19* August 2022, ***Accepted:*** *07* September 2022

Published Online: *29* September 2022

In-Text Citation: (Shuang et al., 2022)

To Cite this Article: Shuang, G. C., Siok, T. H., & Ahmad, T. S. A. S. (2022). Learning Communicative Mandarin Using Graphic Organisers. *International Journal of Academic Research in Progressive Education and Development*, *11*(3), 1694–1710.

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Vol. 11(3) 2022, Pg. 1694 - 1710

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Learning Communicative Mandarin Using Graphic Organisers

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Abstract

Mandarin has a discrepancy between the phonological structure and orthographic features. Therefore, it is challenging for non-native speakers to master it. As a result, a delayed-character introduction (DCI) approach which is known as pinyin is used in Universiti Teknologi MARA (UiTM) to assist beginner students in learning Mandarin. Various studies have been conducted to determine which learning strategies students prefer and will help them to master the learning of Mandarin. Besides, such research outcome becomes a guideline for lecturers to design suitable teaching and learning strategies. The main objective of this research is to investigate how students can learn Mandarin successfully especially using learning strategies known as graphic organisers. The quantitative method using a questionnaire was employed on 119 students who enrolled in Elementary Mandarin 1 at UiTM. The findings based on mean and standard deviation scores indicate that the majority of students agreed that graphic organisers help them to learn Mandarin. Graphics/ images and audios are easier to understand than information (words) and obtain higher scores with a mean of 3.91 and SD=1.0. In addition, most of the students use all the learning strategies in learning Mandarin. However, the most often used by students is to speak Mandarin by practicing and cooperating with others (M=4.00, SD=.96).

Keywords: Communicative Mandarin, Language Learning Strategy, Graphic Organisers, Motivation

Introduction

Mandarin, is the official language or the language primarily in use in China (Jon et al., 2014; Wei & Chen 2021). According to Li (2009), the Mandarin language is referred to Modern Mandarin from the mid-nineteenth century. Wen (2018) further indicates that Mandarin usually refers to the China's standard spoken language. Even Mandarin is one the most common spoken language in the word, it is challenging to master due to the phonological structure and orthographic features (Ho & Bryant, 1997). Mandarin has thousands of

characters and is tonal language which uses a logographic language system. Mandarin uses 24 basic strokes combined differently to form radicals, and this is the basic components to make characters (Sung, 2014). There are two teaching methodology for teaching Mandarin which are the Chinese character introduction approach (CFL) and the delayed-character introduction (DCI) approach. Many educators support the DCI approach which pinyin should be associated with characters in order to assist beginner student to learn Mandarin better (Dew, 2005; Jorden & Walton, 1987; Packard, 1990; Swihart, 2004; Unger et al., 1993, Ye, 2013). In Universiti Teknologi MARA (UiTM), students learn basic Mandarin using the DCI approach where pinyin (phonetics) is associate with Chinese characters.

According to Oxford (2003), a language learning style and strategy can affect students in how well they can learn a foreign language. Oxford (1990) proposed a six basic types of language learning strategies in teaching and learning language namely Metacognitive, Cognitive, Memory, Compensation, Social, and Affective). Rubin (1975) revealed that successful students in language learning used the learning strategies that met their own need and found that language learning strategies could help unsuccessful students to improve their language learning. Some researchers have referred to and adopted Oxford's learning strategies on how leaners can improve their language proficiency and achievement in the Mandarin language as a second or foreign language via language learning strategies approaches.

Liu and Wang (2018) demonstrated that good students in learning Mandarin were actively involved in the language learning process and found ways to overcome linguistic, affective, or environmental obstacles. Besides, they also use various strategies to self-regulate their learning throughout their learning careers.

Yeoh (2019) conducted a research on suitable learning styles and learning strategies of Chinese as foreign language (CFL). The findings can provide educators new directions for making changes in teaching methods in order to improve students' performance. According to Yeoh (2019), with regard to language learning strategies, it was found that social, metacognitive and memory strategies were the most frequently used strategies, while affective was the least used strategy among the participants of the study.

Wu (2007); Lew (2020) indicated that good students learn Mandarin through the practice and application of Mandarin, which belongs to cognitive strategies and social strategies of learning strategies for Malay students.

Problem Statement

Mandarin is a tonal language with four acoustic tones to distinguish the meaning of words and uses a logographic system for its writing (Chua & Tan, 2015; Jiang, 2015). Whereas English and Malay use alphabet letters to form a word and no changes in tones to the word for a different meaning. These cause significant differences in Mandarin and the English or Malay language. As a result, it is a challenge for students with the English and Malay background to learn Mandarin. Chua et al (2020), conducted a survey to examine students' view on the challenges in learning Mandarin among non-native students in Universiti Malaysia Terengganu, Kuala Terengganu. 80 participants without the target language knowledge were chosen by purposive sampling technique. The findings revealed that the most challenge in learning Mandarin is Chinese characters. Other challenges include pronunciation, intonation,

grammar, vocabulary, oral communication, giving presentation and composition. Numerous studies have found that non-native students have difficulty in learning Chinese characters (Chua & Tan, 2015; Osborne, 2018), pronunciation in consonants, vowels and tones in Mandarin language (Chun et al., 2012; Jiang & Cohen, 2018; Khor et al., 2013).

In learning Mandarin, memorizing what strokes and components make up each of the characters needs time and effort (Lee & Kalyuga, 2011). Chua & Tan (2015) in a review study summarized the challenges in learning Chinese characters among non-native students in Malaysia. The study based on the logographic system and tonal language of the Chinese character characteristics to elaborate the difficulties in learning Chinese characters among non-native students in Malaysia. The study concludes that non-native Mandarin speakers in Malaysia are lack of exposure in tone features due to the students' Malay and English language background. The students need more time to remember the combinations of strokes, radicals and the tone of the Chinese characters. In order to read most of the Chinese written materials, the students have to master about 3000 Chinese characters that commonly used and that are seen in 99% of Chinese written materials (Wong et al., 2010).

There are numerous of studies on the grammatical issues in learning Mandarin as a foreign language and second or third language. Mok et al (2019) conducted a mixed method study on the error analysis of learning Mandarin endocentric phrases among the Malay students in UiTM Shah Alam campus, Malaysia. All the 40 participants were from a Mandarin introductory level 2 course students and had no prior knowledge in Mandarin language. Common error types made by Malay students in learning the Mandarin endocentric phrases were identified. The omission of measure words and the reversed string order of endocentric phrases were the most obvious mistakes made by the students. The study found that the first language disruption is the main factor for the errors. Suggested teaching methodology included the technique design, interactive and collaborative learning and innovative learning. In accordance with the results, previous study had demonstrated that Malay students' linguistic errors especially in constructing phrases order in sentences were due to the negative language transfer from the mother tongue language (Yong & Lee, 2015).

There were studies investigated the instructional methods to cope with the challenges in learning Mandarin. Osborne (2018) conducted an action research that applied mixed method to investigate four approaches to teaching Chinese as a foreign language to beginner students. All 85 participants had no background in Mandarin. The participants were divided into four groups and Mandarin were taught via rote memorisation, delayed character introduction, character colour-coding, or a unity curriculum approach respectively. The results show that learning Mandarin characters are one of the more difficult aspects at the beginning stage. The character colour-coding method enhancing recognition and recall characters skills for beginner students. On the other hand, delayed introduction of characters method reduced the anxiety of beginner students.

According to He (2008), memes in a language can be replicated and transmitted in two ways, which is the same content in different forms, and the same form with different contents. Zhou (2014) delineated that from the perspective of memetic, teaching Mandarin as a foreign language is to use the characteristics of assimilation, memory, expression and dissemination of memetic reproduction to realize the input, internalization, strengthening and output of

Mandarin language. A study by Zhou (2014) claimed that recitation, context, imitation, and association teaching method significantly improved students' listening skill and they were satisfied with their abilities of speaking, reading, writing, and translation. The study suggests that it is crucial to implement language memes to target students and meet the assimilation conditions of meme reproduction, integrated multimedia resources such as classroom PPT, e-product, video and audio files that support teaching materials.

Memorizing is a crucial strategy to overcome the setback in learning Mandarin (Chua et al., 2020) due to the characteristics of Mandarin language itself. Graphical organisers are tools for facilitating learning and instruction that combine linguistic forms such as word and phrases to non-linguistic form such as images, symbols, lines to describe content, structure and the key conceptual relationships (Darch & Eaves, 1986). Tan (2017) claims that the human brain reacts more quickly to the information of the picture and the accompanying language characters. The role of images or any form of graphics/ images are crucial to cooperate or assist in various teaching Mandarin methods due to the characteristics of the Mandarin language. Hence, this study aims to investigate how students can learn Mandarin successful.

Objective and Research Questions

The main objective of this research is to investigate language learning strategies preferred by students to learn Mandarin.

The research questions of the study are as follows:

a. Are graphics/ images and audios useful to help students to learn Mandarin?
b. What are the strategies applied by students to learn Mandarin?

Literature Review

The relevant literature of the research is presented as the following.

Graphic Organisers

Graphic organisers are widely used in teaching Mandarin for non-native speakers (She, 2012; Tan, 2017; Yuan, 2014; Zhang, 2012). The application of multimedia graphic organiser enhances learning efficiency in various aspects of teaching and learning Mandarin as a foreign, second and third language, especially at the elementary level in learning pronunciation, vocabulary, grammar, text and Chinese characters (Tong 2011). Chen (2014) proposes the graphical teaching method for vocabulary, grammar, text and other aspects of teaching should be used widely because the method is effective in teaching Chinese as a foreign language. In addition, the application of graphic organiser to assist teaching is effective in developing higher order cognitive skills for learning Chinese at the elementary level (Kishi et al., 2015). However, the use of graphical teaching methods needs to be practical, purposeful, systematic, enlightening, and complementing with the explanation (Chen, 2014).

Tan (2017) carried out an experimental research of graphical teaching method in teaching Chinese as a foreign language on the elementary level of Korean students in China. Class observation and interview were used in the study. The participants had no Mandarin background. Their first and second languages were Korean and English language respectively. The textbook used by the participants were in Chinese and English. Therefore, the input

process of English, Korean and Chinese was complicated and affected the learning progress. Furthermore, the students were not motivated to learn. The study aimed to explore the use of graphical teaching method in teaching pronunciation, vocabulary, grammar and Chinese characters. The participants were divided into two groups. One group is taught with graphical teaching method and another group is without graphic to cooperate in teaching. The results indicate that the graphical teaching method group maintained a higher degree of enthusiasm in learning. The method stimulated students' interest, improved and shortened the time of language input. As such, the time for students to learn and be able to communicate was shorter. This improved learning effects and enhance students' confidence. The study suggests that the appropriate use of pictures in teaching helps students to learn Mandarin easily, happily, and they enjoy the fun of learning. The study has significant implications for the advantages of using graphical teaching Chinese as foreign language at the elementary level in various aspects, such as using tongue map for pronunciation, pictures for nouns. adjectives and verbs, illustrations or comic strips for teaching grammar. The study claims that the human brain reacts more quickly to the information of a picture and the accompanying language characters. Thus, the graphical teaching method shortens the student's psychological distance in an intuitive way. Similarly, Yuan (2014) found that images are not language but more intuitive and vivid than language.

Zhang (2012) conducted a study on the application of icons and symbols in teaching Chinese as foreign language at the College of Intensive Training, Beijing Language and Culture University. 200 participants from the elementary level of Chinese Intensive Course involved in this quantitative study. The study investigated students' perceptions of advantages, disadvantages and students' satisfaction of various teaching mediums (Chinese characters, Romanized, English, physical props and icon or symbols). The results showed that students' satisfaction scores for the icon or symbol teaching medium was higher than the other three mediums. The study concludes that the graphical teaching medium serves as a bridge to convey the meaning of words, paragraph and discourse between the instructor and the students. Visual media language is easy to operate, time saving and more effective to engage students to actively practice the vocabulary, grammar and Chinses character. The method helps to create a stress-free learning atmosphere.

Language Learning Strategies

There are various definitions for language learning strategies.

Oxford (1990, p.1) defines language learning strategies as "steps taken by students to enhance their own learning and tools for active self-directed involvement in learning, which is essential for developing communicative competence". O'Malley and Chamot (1990) indicate language learning strategies are the tools for active, self-directed involvement needed for developing the second language communicative ability. Cohen (2003) and Oxford (2003) state that learning strategies are specific behaviours or thought processes that students use in a language task to gain knowledge. Referring to Chamot (2005) language strategies are the specific mental and communicative procedures that students apply to learn and use language. These strategies can be learned, and consciously applied in different learning situations. Wenden and Rubin (1987) cited in Nhem (2019) defines language learning strategies as any gatherings of activities, steps, plans, schedules or practices utilized by the

students to encourage the way toward acquiring, storing, recovery, and complications of language input.

The use of language learning strategies leads to better proficiency or achievement in mastering the target language (Griffiths, 2003; Oxford, 2003). Oxford designed an inventory name Strategy Inventory of Language Learning (SILL) which has been revised for several times and now become a famous standard measure language learning strategies. Nazri et al (2016); Lyu and Xu (2019); Tandoc (2019) perceive SILL is a long-established measuring tool through field experiments and is well accepted by many linguistic researchers nowadays.

Table 1
Classification of Language Learning Strategies (Oxford, 1990)

Direct Strategies		Indirect Strategies	
Memory strategies	create mental linkage	Metacognitive strategies	Learning centering
	applying images and sounds		Learning planning
	Reviewing		Self-evaluating in learning
	Employing actions		Self-monitoring for errors in the learning
Cognitive strategies	Reasoning	Affective strategies	Anxiety reduction
	Practicing		Self-rewards/self-talk
	Receiving and sending messages		Self-encouragement
	Analysing	Social strategies	Asking questions
			Asking for clarification
	Summarizing		Cooperating with others
Compensation strategies	Intelligent guess		Developing empathy
	Overcoming limitations in speaking by code-switching		
	Overcoming limitations and writing by looking at dialogue		

Referring to Table 1, when students use direct strategies, they use either their memory strategies, cognitive strategies or compensation strategies. Whereas, some indirect strategies used by students are Metacognitive strategies, Affective strategies and Social strategies. However, some students will use a combination of both.

Past studies on Mandarin language learning strategies

A study by Tan et al (2019) focused particularly on metacognitive language learning strategies (McLLS). It aimed to identify the McLLS used by students besides examining the effect of learning level and gender on McLLS. The participants were 582 undergraduates who were

learning Mandarin level one, level 2 and level 3 as a foreign language in a public university in Malaysia. They employed a quantitative study using stratified samplings. The findings indicated that Centering your Learning and Evaluating your Learning were of the highly used range while Arranging and Planning Your Learning were of the moderately used range. The findings also showed that there were no statistically significant differences by gender in McLLS used. However, there were partial significant differences across learning levels on the McLLS used. There was a significant difference in the usage of Arranging and Planning Your Learning for students of Level One and Level Two as compared to the students of Level Three. The students in Level One also significantly used Centering Your Learning strategies more frequently than the students of Level Three. In addition, the results showed that there was no interaction effect between gender and course learning level on McLLS.

Lew (2020) did a study on how good language students could improve their Mandarin application ability through cognitive strategies in a non-target language environment. The questionnaire survey and interview methods were applied. The sample was the students who took level 2 and 3 basic Mandarin courses at Universiti Teknologi MARA Perlis during March until July 2019. The students come from different programmes and are in a non-target language environment. In this study, 40 questionnaires were distributed to 32 general students and eight good language students. The data of 40 valid questionnaires were statistically analysed. The semi-structured interview was conducted among four students. The questionnaire consisted of two parts. The first part was about students' personal information, and the second part was about their application of cognitive strategies in daily life, including listening, speaking, reading and writing skills. The second part of the questionnaire mainly refers to the cognitive strategies in the Oxford learning strategy scale, and was adapted according to the research purpose, which included 14 items. From the questionnaire and interview, Lew (2020) found that the good language students paid more attention to the use of Chinese characters than the general students. Their use of Mandarin was not limited to listening and speaking, but to trying to incorporate Chinese characters or pinyin into their daily writing. Besides that, good language students had a significant awareness of autonomous learning. Lew (2020) suggests that students, with the assistance of teachers, should independently find suitable learning strategies to make up for the deficiencies of learning a language in a non-target language environment.

Yee et al (2021) researched on which learning strategies was used the most or preferred when students studied Mandarin as a foreign language at USIM, Malaysia. They employed a survey questionnaire to 171 participants who were from seven classes of Mandarin. The finding showed that students employed cognitive strategies the most and metacognitive strategies the least. Among the most famous strategies included taking notes, revision of words, discuss with classmates, and review vocabulary (included graphic organises method). The results of the study suggest that systematic vocabulary learning strategies should be introduced to students to enhance Mandarin vocabulary size. Furthermore, the initiative to utilise the learning strategies preferred by students is needed too.

Methodology

The research employed a quantitative method by using a survey as the instrument. The survey was conducted by using a questionnaire which was developed by using Google Form. The questionnaire contained three sections which were Section A (demographic profile), Section

B (schema, dual coding and cognitive overload) and Section C (language learning strategies). Section A contained two items namely faculty and gender. Whereas, Section B and C contained 11 and 12 items respectively. The items in Section B and C were provided with five Likert-scale options (1=never, 2=seldom, 3=sometimes, 4=often, and 5-almost always). The questionnaire was distributed to students via the class WhatsApp groups. The students were given two weeks to answer the survey. The sample of the study was selected through purposive sampling comprising students from several faculties at UiTM Selangor who enrolled in Mandarin classes.

The data collected were analysed by using the Statistical packages for Social Sciences (SPSS). Scale reliability analysis was conducted to assess the reliability of items in Section B of the questionnaire to obtain the Cronbach's alpha (α) value. Then, the Kolmogorov-Smirnova and Shapiro-Wilk tests were conducted to assess the normality of data for items in Section B. It is necessary as when means are used to interpret the results, the data need to have normal distributions (Ghasemi & Zahediasl, 2012). Finally, the analysis for descriptive statistics (percentage, means and standard deviations) was conducted. The results were presented in charts. The means were interpreted by using a guideline by Alston and Miller (2002): scale 1: 1.00 - 1.49, scale 2: 1.5 - 2.49, scale 3: 2.5 - 3.49, scale 4: 3.5 - 4.49, and scale 5: 4.5 – 5.0. The scales used in the study were 5: almost always, 4: often, 3: sometimes, 2: seldom and 1: never).

Results and Discussions

The results are presented in three sections which are reliability of items with scales, demographic profile and strategies used by students to learn Mandarin.

Table 2 indicates the result for the scale reliability analysis of the items in Section B and C. The were 23 items (α = .967). The reliability of the items is high as the acceptable α values in education is 0.7 (Taber, 2018).

Table 2
Reliability analysis

Cronbach's Alpha	N of Items
.967	23

Normality Test for items in Section B and C

Table 3 and 4 indicates that all data for all items in Section B and C were significantly normal at $p<0.001$.

Table 3
Tests of Normality for Section B: Schema, dual coding and cognitive overload

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Item	Statistic	df	Sig.	Statistic	df	Sig.
1	.188	119	.000	.861	119	.000
2	.233	119	.000	.855	119	.000
3	.206	119	.000	.872	119	.000
4	.197	119	.000	.873	119	.000
5	.206	119	.000	.863	119	.000
6	.199	119	.000	.860	119	.000
7	.226	119	.000	.846	119	.000
8	.249	119	.000	.847	119	.000
9	.227	119	.000	.849	119	.000
10	.207	119	.000	.860	119	.000
11	.251	119	.000	.844	119	.000

a. Lilliefors Significance Correction

Table 4
Tests of Normality for Section C: Language learning strategies

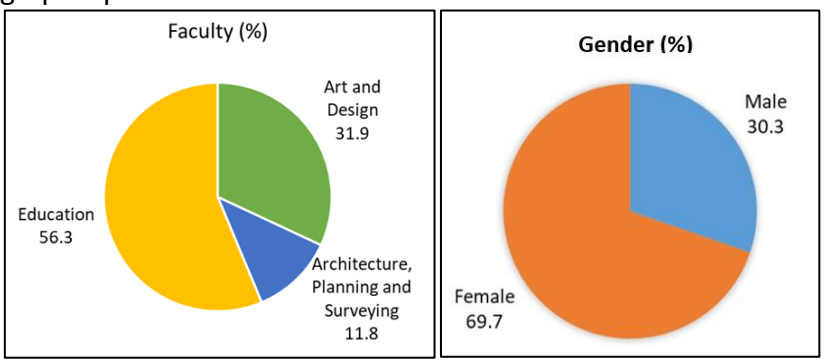
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Item	Statistic	df	Sig.	Statistic	df	Sig.
1	.248	119	.000	.841	119	.000
2	.224	119	.000	.858	119	.000
3	.254	119	.000	.852	119	.000
4	.193	119	.000	.878	119	.000
5	.219	119	.000	.863	119	.000
6	.218	119	.000	.885	119	.000
7	.230	119	.000	.871	119	.000
8	.220	119	.000	.878	119	.000
9	.214	119	.000	.870	119	.000
10	.268	119	.000	.840	119	.000
11	.228	119	.000	.873	119	.000
12	.243	119	.000	.834	119	.000

a. Lilliefors Significance Correction

Demographic Profile

Figure 1 shows the demographic profile of the sample, consisted of 119 students from three faculties. More than half of the students (56.3%) were from Faculty of Education while other students were from Faulty of Art and Design (31.9%) and Faculty of Architecture and Surveying (11.8%). More than two third of the students (69.3%) were females and 30.3% of them were males.

Figure 1 Demographic profile



Are graphics/ images and audios useful to help students in learning Mandarin?
Table 5 shows the results of how frequent graphics/ images and audios could help students to learn Mandarin. The results were arranged according to the mean scores from the highest to the lowest score.

Table 5
Schema, dual coding and cognitive overload in learning Mandarin

Item		Mean	Std. Deviation	Interpretation of Mean
7	Graphics/images and audios are easier to understand than information (words).	3.91	1.00	Often
11	I understand the graphics/images because they are related to my current learning.	3.89	0.97	Often
2	Graphics/images allow me to understand the content of the written text.	3.87	1.02	Often
8	Graphics/images and audios help me sequence the information into a manageable order.	3.87	0.97	Often
9	Graphics/images and audios motivate me to read further about the topic.	3.87	0.97	Often
6	I can easily associate pictures and audios with my new knowledge.	3.85	0.99	Often
1	Graphics/images allow me to interpret the language of the written texts using my prior	3.81	1.03	Often
10	Even if I don't have previous knowledge, I can still understand if I look at the graphics/images.	3.81	0.99	Often
5	I can connect the information with my background knowledge.	3.8	0.95	Often
3	When I see information, I can convert the information verbally.	3.71	1.01	Often
4	I can transfer graphics/images into words	3.71	0.98	Often

Mean=M Standard Deviation=SD

Item 7: "Graphics/images and audios are easier to understand than information (words)" recorded the highest mean score (M=3.91, SD 1.00). It indicates that information presented in graphics/images and audios helped students to understand Mandarin more easily compared with information presented in text only. This finding aligns with Tan's (2017) statement that graphics/ images and audios help human brain react to the information faster than text due to information presented in graphics/ images and audios are easy to be memorised and stored into the long term memory.

Two items recorded the lowest mean score (M=3.71) which are Item 3: "When I see information, I can convert the information verbally." and Item 4: "I can transfer graphics/images into words.". The findings suggest that the students might just learn Mandarin, even they could understand such information. However, due to lack of vocabulary and skills to form sentences learnt from Mandarin level one, it might be hard for them to say the information provided in graphics in Mandarin.

Other items demonstrated graphic organisers often help students in learning Mandarin with the means scores ranged from 3.89 to 3.80. The findings demonstrated that graphic organisers often useful for them to relate graphics/ images to their current learning, understand the content of the written text, sequence the information into a manageable order, motivate them to read further about the topic, associate pictures and audios with their new knowledge easily, interpret the language of the written texts using their prior knowledge, understand by looking at the graphics/images even if they did not have previous knowledge, connect the information with their background knowledge.

Overall, the results indicate that graphics/ images and audios were often useful to help students in learning Mandarin. Therefore, information with graphics/images and audios can help students to understand Mandarin better and motivate them to learn Mandarin.

What are the strategies applied by students to learn Mandarin?
Table 6 shows the results of how frequent students applied the strategies to learn Mandarin. The results were arranged according to the mean scores from the highest to the lowest score.

Table 6
Strategies used by students to learn Mandarin

Item		Mean	Std. Deviation	Interpretation of Mean
1	I learn to speak in Mandarin by practicing	4.00	0.96	Often
12	I learn well when I cooperate with others	4.00	0.95	Often
10	While learning Mandarin, I often encourage myself.	3.93	0.95	Often
3	I learn Mandarin by understanding the structure of the sentences.	3.84	0.97	Often

5	When I learn a language, I will overcome my limitations in writing by looking at dialogue samples.	3.80	1.00	Often
2	I learn Mandarin by analysing the rules in the language.	3.76	0.91	Often
9	While learning Mandarin, I will try to lower my anxiety.	3.76	1.01	Often
11	I often ask questions when there is something	3.73	1.00	Often
4	When I learn a language, I will overcome my limitations in speaking by code-switching.	3.70	0.98	Often
8	I often evaluate my learning	3.64	1.01	Often
7	I usually arrange and plan my language learning.	3.63	1.02	Often
6	When I find a word I do not understand, I will make an intelligent guess.	3.61	1.03	Often

Mean=M Standard Deviation=SD

The highest mean scores were recorded by two strategies: Item1: “I learn to speak in Mandarin by practicing” (M=4.00, SD=.96), and Item 12: “I learn well when I cooperate with others.” (M=4.00, SD=.95). While the lowest mean score was recorded by Item 6: “When I find a word I do not understand, I will make an intelligent guess.” (M=3.61, SD=1.03). The mean scores for other strategies ranged from 3.63 to 3.93, indicating that they also often used the strategies. The strategies were encouraging themselves, understanding the structure of sentences, looking at dialogue samples, analysing language rules, lowering their anxiety, asking question, applying code-switching to overcome their limitations in speaking, evaluating their learning and planning their language learning. Therefore, the results indicate that students often used all the strategies in learning Mandarin.

The findings revealed that good students will use various learning strategies to self-regulate their learning (Liu & Wang, 2018). The research also supported by previous studies of Wu (2007); Lew (2020); Yee et al (2021) revealing that good Malay students learnt Mandarin through the practice and application of Mandarin, which belongs to two learning strategies namely cognitive strategies and social strategies. Students used less compensation strategies in learning Mandarin.

Conclusion

The finding of the study suggest that graphic organisers are a type of language learning strategy which facilitate students in learning Mandarin, which parallels with the previous research outcome by (Chen's, 2014). Information presented in graphics/images and audios assist students to understand Mandarin more easily compared with information presented in text only. Graphics/images and audios also help them to understand Mandarin better even without previous knowledge. Besides, graphic organisers help them to manage the

information for learning Mandarin by sequencing it. When they can understand Mandarin better via graphic organisers, they are motivated to learn Mandarin.

The research also showed that students used all learning strategies when learning Mandarin. However, they used more cognitive skills and social skills which are practising mandarin with others and cooperating with others. These results are supported by Kishi et al (2015) who indicate that graphic organisers are effective for students who learning Mandarin at the elementary level. However, the effectiveness of graphical teaching methods needs to be practical, purposeful, systematic, enlightening, and complement the explanation (Chen, 2014). Therefore, lecturers can use teaching and learning activities such as simulation and role play in teaching and learning Mandarin. Future research could be conducted by looking at how students use different language learning strategies to facilitate Mandarin communicative skills via the use of graphic organisers. A qualitative method can also be applied to investigate students' behaviour in learning Mandarin that relates to the learning strategies employed by them.

This research studied the application of approach known as graphic organisers where multimedia elements such as text, audios and graphics were emphasised. Therefore, there is possible research to understand how graphic organisers affect learning by using the Cognitive Theory of Multimedia Learning (CTML) that describes three assumptions in processing multimedia elements which are dual channels (auditory and visual), limited capacity of channels which may cause cognitive load when excessive multimedia elements are provided, and active processing where cognitive processing occurs to make learning to happen (Mayer, 2005). With the advancement of technology, there is a potential in using digital sources with graphic organisers to support young learners' needs in learning Mandarin. Therefore, it is essential to apply the CTML in future research in the development of digital learning activities with graphic organisers to ensure that multimedia elements provided in the digital learning activities are suitable and adequate to support learning effectively.

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