



INVESTIGATING THE VOCABULARY LEARNING DIFFICULTIES AND STRATEGIES OF INDONESIAN STUDENTS LEARNING CHINESE-MANDARIN: A CASE STUDY

Fatima B. Cayabyab, Princess P. Santos

*Graduate School, Angeles University Foundation, Angeles City,
Pampanga, Philippines*

ABSTRACT

Vocabulary learning is a key part of second language learning because students need words to understand, speak, read, and write in the target language. This study, conducted from April 2025 to September 2026, examined the vocabulary learning difficulties and strategies of Indonesian students learning Chinese-Mandarin as basis for a classroom intervention plan. It used an explanatory sequential mixed-methods case study design. Quantitative data were gathered from 25 Grade 6 respondents through a survey on Mandarin vocabulary difficulties and learning strategies, while qualitative data were collected from ten selected participants through follow-up interviews. The interview responses were analyzed using Colaizzi's analytic framework. Findings showed that the respondents experienced a moderate level of difficulty in Mandarin vocabulary learning, with an overall weighted mean of 2.77. The highest difficulty was remembering which tone goes with a Mandarin word, followed by recognizing Chinese characters and telling similar characters apart. Vocabulary learning strategies were used sometimes, with an overall mean of 2.97. Cognitive strategies ranked first, while memory strategies ranked fifth. The qualitative findings clarified that students struggled with tone recall, character recognition, pronunciation, pinyin dependence, and meaning recall. Based on these findings, the study proposed an intervention plan focused on tone practice, pinyin-character links, sentence use, guided repetition, peer tasks, and game-based vocabulary activities.

Keywords: *Mandarin Vocabulary; Indonesian Learners; Vocabulary Learning Difficulties; Vocabulary Learning Strategies; Mixed-Methods Case Study; Tone Recall; Character Recognition*

INTRODUCTION

Vocabulary acquisition plays a key role in learning a second language because it gives learners the tools needed to understand and express themselves in the target language. Knowing vocabulary helps develop skills in listening, speaking, reading, and writing, and it allows learners to share thoughts and understand language in real-life situations. Learning vocabulary involves more than just memorizing words; it requires learners to recognize word forms, understand how words relate to their meanings, know how they are used, and be able to recall them when needed. Therefore, research has stressed the importance of using suitable and adaptable strategies to help learners acquire and remember vocabulary (Ivanovska & Xhaferi, 2023; Pascual et al., 2022).

Different strategies can help learners during the process of learning vocabulary. Cognitive strategies such as repetition and practice support learners in processing and keeping new words in memory, while memory strategies may include associations, visualizations, grouping, and mnemonics. Metacognitive strategies allow learners to plan, track, and assess their learning, while social strategies involve working with teachers and peers (Adam & Magfirah, 2022; Chiew & Ismail, 2021; Nur & Jusoh, 2022). These strategies show that vocabulary learning is a multi-faceted process, and learners may use different methods based on their needs and the challenges they face.

Technology has also increased the opportunities for vocabulary learning. Mobile-assisted language learning lets students access vocabulary materials and practice vocabulary outside the classroom, offering more flexibility for repeated exposure and self-directed study (Pagadala, 2019). Multimedia resources can also support vocabulary acquisition by offering visual and contextual information. Video-based materials help learners connect vocabulary with meaningful situations and visual cues, while subtitles can provide extra support for understanding unfamiliar words (Astutiningtyas et al., 2023; Lertola, 2019). The increasing availability of digital learning resources offers more chances for learners to combine traditional vocabulary learning methods with technology-enhanced approaches.

This study focuses on Indonesian students learning Chinese-Mandarin. Mandarin is particularly challenging because its language system is very different from Bahasa Indonesia. Indonesian learners must learn vocabulary while also understanding unfamiliar sounds and writing systems. Differences in the sound systems of Bahasa Indonesia and Mandarin can lead to pronunciation difficulties among Indonesian learners (Hasel, 2022). Mandarin is also a tonal language, meaning that the tone of a word can change its meaning. As a result, learners must accurately recognize and produce tones while learning vocabulary forms and meanings.

Learning tones is one of the major challenges faced by Mandarin learners. Learners whose first language does not use tones may find it hard to hear, distinguish, remember, and produce Mandarin tones. Research on second-language Mandarin has shown that tone perception can be a big challenge because being able to recognize tones is closely linked to the ability to understand and use vocabulary correctly (Pelzl, 2019).

For Indonesian learners, difficulties with tones can affect not only pronunciation but also vocabulary learning and communication.

Another important aspect of Mandarin vocabulary learning is recognizing and reading Chinese characters. Unlike alphabetic writing systems, Chinese characters require learners to identify their visual forms and connect them with pronunciation and meaning. Learners may struggle to tell characters apart, remember their shapes, and recall their meanings. Research on Chinese character recognition has highlighted the importance of proper instructional and technological support in helping learners develop their recognition and reading skills (Olmanson et al., 2021). These challenges make Mandarin vocabulary learning especially complex because students must remember several connected aspects of a word, including its written form, pronunciation, tone, and meaning.

Research involving Indonesian learners has also shown the importance of studying Mandarin in the context of learners' specific linguistic and educational backgrounds. Lianisyah et al. (2022) examined the motivation and challenges faced by Indonesian non-Chinese learners of Mandarin and identified the difficulties that can arise when learning a language that is quite different from their own. More recent research has also looked at pronunciation issues among Indonesian students learning Mandarin, showing that identifying specific problems in Indonesian educational settings remains important (Nurhusna et al., 2024).

Although learners face many challenges, they are not passive in their approach to vocabulary learning. They use various strategies to understand, remember, and apply new vocabulary.

Cognitive and memory techniques can assist learners by utilizing repetition, practice, association, and active recall. Engaging in social interactions can also create chances for learners to clarify meanings, get help, and practice vocabulary with instructors and classmates. Research has highlighted that the methods used for learning vocabulary can vary based on learners' backgrounds, past experiences, and personal preferences (Adam & Magfirah, 2022; Ghafar & Mohamedamin, 2022; Nur & Jusoh, 2022).

The literature also indicates that no single method is effective for all vocabulary learners. Some methods focus on intentional learning through repetition, memorization, and structured practice, while others emphasize meaningful exposure, learning in context, and the use of technology. Memory and cognitive strategies may be especially helpful when learners need repeated practice, whereas multimedia and mobile-assisted learning can offer additional chances for contextual and independent learning (Astutiningtyas et al., 2023; Pagadala, 2019). Likewise, social and interactive methods can support learners by giving them opportunities to practice vocabulary and get help from others (Ghafar & Mohamedamin, 2022).

These findings show that vocabulary learning involves several key aspects. Learners must recognize vocabulary forms, understand their meanings, use them

correctly in context, and be able to retrieve them when needed. In the case of Mandarin learning, these aspects are linked with pronunciation, tone recognition, and knowledge of Chinese characters. As a result, difficulties in vocabulary learning can affect the strategies that learners choose. A student who has trouble remembering vocabulary might rely more on repetition or mnemonic techniques, while a student struggling with pronunciation or tones may seek help from teachers, classmates, or digital tools.

This connection between vocabulary learning difficulties and the strategies used to address them forms the foundation for this study. The two aspects are viewed as interconnected rather than separate parts of the learning process. Students may face difficulties related to pronunciation, tones, character recognition and writing, vocabulary retention, and contextual usage. In response to these difficulties, they may use cognitive, memory, metacognitive, social, or affective strategies, including those supported by technology. Exploring both aspects together can therefore offer a clearer understanding of how Indonesian students experience Mandarin vocabulary learning and how they deal with the challenges they face.

The literature also points out an important area that requires further research. While previous studies have provided valuable insights into vocabulary acquisition, vocabulary learning strategies, Mandarin pronunciation, tone learning, character recognition, and technology-supported language learning, many of these studies focus on specific strategies or individual difficulties rather than examining both difficulties and the responses learners have to them together. Studies on Mandarin learners have involved various groups, including adult learners, university students, and those from different linguistic backgrounds. Therefore, there is still a need to explore the vocabulary learning experiences of Indonesian students within their specific linguistic and educational context.

This gap is significant because simply identifying students' difficulties may not be enough to improve vocabulary instruction. Teachers also need to know what students do when they face these difficulties and which strategies they use to overcome them. On the other hand, looking at vocabulary learning strategies without understanding the problems learners face may only lead to a partial understanding of the learning process. By investigating both difficulties and strategies together, educators can gain more useful information for creating instruction that directly meets learners' needs.

This study is also important because Mandarin vocabulary learning continues to pose significant educational challenges for Indonesian learners. The differences between Bahasa Indonesia and Mandarin, especially in pronunciation, tones, and the Chinese writing system, may cause ongoing difficulties that require proper instructional support (Hasel, 2022; Lianisyah et al., 2022). At the same time, increasing access to multimedia, mobile applications, and other digital resources offers new possibilities for supporting vocabulary learning (Astutiningtyas et al., 2023; Pagadala, 2019). Understanding how students use strategies in relation to their difficulties could help educators make more effective use of both traditional and technology-based methods.

The findings of this study may also contribute to future research and instructional development. Future researchers might explore which vocabulary learning strategies are most effective for specific difficulties in Mandarin learning. Additional studies could also examine whether factors such as age, proficiency level, linguistic background, the length of Mandarin study, and the learning environment influence the difficulties students face and the strategies they employ.

In addition, future research could look into whether planned approaches to learning vocabulary can help students improve their pronunciation, control of tone, ability to recognize characters, memory of words, and ability to use words in different contexts over time.

Therefore, this study aims to look at the difficulties Indonesian students face when learning Chinese-Mandarin vocabulary and the methods they use during the learning process. Specifically, the study wants to understand better the challenges students face and the techniques they use to deal with these problems. By looking at these areas together, the study may offer valuable information for teachers, curriculum designers, and researchers who want to enhance vocabulary teaching for Indonesian students. The results could also serve as a foundation for creating more suitable teaching methods and support that address the specific needs of Indonesian learners in vocabulary acquisition.

Research Questions

This study aimed to investigate the vocabulary learning difficulties and strategies encountered by Indonesian students learning Chinese-Mandarin, using surveys and interviews to inform the development of effective teaching methods and educational resources.

Specifically, it aimed to answer the following questions:

1. What is the demographic profile of the respondents in terms of:
 - 1.1 age;
 - 1.2 gender;
 - 1.3 grade level;
 - 1.4 length of Mandarin study; and
 - 1.5 Mandarin grade?
2. What is the level of difficulty experienced by the respondents in learning Chinese-Mandarin vocabulary in terms of:
 - 2.1 pronunciation;
 - 2.2 character recognition;
 - 2.3 tone understanding;
 - 2.4 vocabulary retention; and
 - 2.5 contextual usage?
3. What vocabulary learning strategies do the respondents use in terms of:
 - 3.1 memory;
 - 3.2 cognitive;
 - 3.3 metacognitive;

- 3.4 social; and
- 3.5 affective strategies?
- 4. What qualitative themes emerge from the respondents' experiences regarding Mandarin vocabulary learning difficulties and the strategies they use to address them?
- 5. Based on the integrated quantitative and qualitative findings, what intervention plan may be proposed to improve the teaching and learning of Chinese-Mandarin vocabulary?

METHODOLOGY

Research Design

The study employed a mixed-methods research design, integrating quantitative survey data with qualitative interviews and open-ended responses to provide a comprehensive analysis of the vocabulary learning difficulties and strategies of Indonesian students learning Chinese-Mandarin. Specifically, the study adopted an explanatory sequential design in which the quantitative phase was conducted first and the qualitative phase followed to explain and elaborate on the initial findings.

The quantitative phase provided numerical information about the respondents' demographic characteristics, the level of difficulty they experienced in learning Mandarin vocabulary, and the frequency with which they used different vocabulary learning strategies. The qualitative phase provided deeper explanations of the experiences behind those patterns. The findings were subsequently integrated through triangulation so that areas of convergence and complementarity could be identified.

Study Locale and Participants

The study was conducted in an international school setting in Riau, Indonesia. The school is not identified in this paper to protect institutional privacy. The participants were Indonesian Grade 6 students enrolled in Chinese-Mandarin classes.

The quantitative phase included 25 respondents. The group represented the available Grade 6 students who met the study criteria and participated in the research. Ten participants were selected for qualitative follow-up to provide additional information about their vocabulary learning experiences, difficulties, and strategies.

The respondents were included because they were Indonesian students enrolled in Grade 6 and were learning Chinese-Mandarin in the study setting. Participation was voluntary and subject to the required parental or guardian consent and student assent procedures. Students who did not meet the inclusion criteria or whose required consent procedures were not completed were not included in the study.

Research Instruments

The quantitative instrument was a structured questionnaire consisting of demographic questions, items on Mandarin vocabulary learning difficulties, and items on vocabulary learning strategies. The difficulty component included 17 items addressing pronunciation, character recognition, tone understanding, vocabulary retention, and contextual use. The strategy component represented memory, cognitive, metacognitive, social, and affective strategies.

The qualitative component consisted of semi-structured interviews and open-ended questions. These instruments allowed selected respondents to explain difficult aspects of Mandarin vocabulary learning in their own words and to describe the strategies and sources of support they used.

The questionnaire underwent face and content validation by three experts, including a Mandarin lecturer and psychometrics teachers. A pilot test was conducted with students who were not part of the main participants. The pilot data were analyzed using Cronbach's alpha. The difficulty scale obtained a Cronbach's alpha coefficient of 0.912711, while the strategy scale obtained a coefficient of 0.933742. These results indicated very high internal consistency for the instrument components.

Data-Gathering Procedure

After the required approvals and consent procedures were completed, the questionnaire was administered to the respondents. The demographic data were collected together with responses to the vocabulary difficulty and strategy items.

The quantitative findings were reviewed to identify patterns that required further explanation. Follow-up participants then took part in semi-structured interviews and responded to open-ended questions. The interviews explored how students experienced tone recall, character recognition, pronunciation, meaning recall, sentence use, and other aspects of vocabulary learning. Participants were also asked about repetition, writing, reading, pictures, applications, videos, teachers, family support, and other strategies or resources that they used.

The qualitative data were transcribed and organized for analysis. The significant statements were identified, meanings were formulated, related meanings were clustered, and themes were developed using Colaizzi's method. The thematic findings were then compared with the quantitative results to identify areas where the two data sets supported, clarified, or expanded one another.

Data Analysis

Descriptive statistics were used to summarize the demographic profile of the respondents, including frequency and percentage. The questionnaire results on

difficulties and strategies were summarized using weighted mean, standard deviation, and verbal interpretation.

The qualitative responses were analyzed through Colaizzi's method and thematic analysis. The analysis focused on recurring difficulties, learning practices, sources of support, and motivational experiences. Finally, the quantitative and qualitative findings were integrated through triangulation and presented through a joint display.

Scope and Limitations

The study focused on one group of Indonesian Grade 6 students learning Chinese-Mandarin in a specific educational setting. The findings therefore provide an in-depth account of this learner group rather than a basis for statistical generalization to all Indonesian learners.

The study also relied partly on self-reported perceptions and strategy use. Individual differences in proficiency, previous learning experiences, home support, motivation, and classroom conditions may influence the results. These limitations were addressed in part through the explanatory sequential mixed-methods design, which allowed interview findings to clarify and contextualize the quantitative patterns.

RESULTS

Demographic Profile of the Respondents

Table 1: Demographic Profile of the Respondents in Terms of Age

Age	F	%
11 yrs old	1	4.0
12 yrs old	21	84.0
13 yrs old	3	12.0
Total	25	100.0

Table 1 presents the demographic profile of the respondents in terms of age. Out of 25 respondents, 1 respondent or 4.0% was 11 years old, 21 respondents or 84.0% were 12 years old, and 3 respondents or 12.0% were 13 years old. The respondents therefore formed a relatively specific age group, with 12-year-old learners representing the large majority.

Table 2: Demographic Profile of the Respondents in Terms of Gender

Gender	F	%
Male	14	56.0
Female	11	44.0
Total	25	100.0

Table 2 presents the demographic profile of the respondents in terms of gender. Of the 25 respondents, 14 or 56.0% were male, while 11 or 44.0% were female. The distribution shows representation from both male and female learners within the Grade 6 group.

Table 3: Demographic Profile of the Respondents in Terms of Grade Level

Grade Level	F	%
Grade 6	25	100
Total	25	100.0

Table 3 presents the demographic profile in terms of grade level. All 25 respondents, or 100.0% of the sample, were Grade 6 students. This provides a clear educational context for interpreting the findings on vocabulary learning difficulties and strategies.

Table 4: Demographic Profile of the Respondents in Terms of Length of Mandarin Study

How long have you been studying Mandarin	F	%
≤6 months	0	0.0
1	1	4.0
More than 1 year but less than 2 years	0	0.0
2-3	1	4.0
≥4	23	92.0
Total	25	100.0

Table 4 presents the respondents' length of Mandarin study. Most of the respondents had studied Mandarin for four years or more. This indicates that the group was not composed primarily of beginning learners and that the reported difficulties should be understood as specific areas that may persist despite several years of exposure.

Table 5: Demographic Profile of the Respondents in Terms of Most Recent Mandarin Grade

Grades	F	%
90-100	6	24.0
80-89	10	4.0
65-79	6	24.0
≤64	3	12.0
Total	25	100.0

Table 5 presents the respondents' most recent Mandarin grades. The variation in grades shows that a similar length of exposure to Mandarin did not result in identical levels of recent academic performance. This profile is relevant because vocabulary difficulties and strategy use may interact with individual differences in learning experiences and achievement.

Difficulties in Mandarin Vocabulary Learning

Table 6: Level of Difficulties in Mandarin Vocabulary Learning

Indicators	Students		
	Weighted Mean*	SD	Verbal Description*
1. I find it difficult to say Mandarin words clearly.	2.60	0.91	Moderately Difficult
2. I find it difficult to say the sounds in Mandarin words correctly	2.80	0.87	Moderately Difficult
3. I find it difficult to repeat a new Mandarin word after hearing it	2.40	0.96	Slightly Difficult
4. I find it difficult to recognize Chinese characters when I see them.	3.24	1.05	Moderately Difficult
5. I find it difficult to tell similar Chinese characters apart.	3.04	0.93	Moderately Difficult
6. I find it difficult to match a Chinese character with its meaning.	2.76	0.97	Moderately Difficult
7. I find it difficult to hear the difference between Mandarin tones.	2.88	1.17	Moderately Difficult
8. I find it difficult to say Mandarin tones correctly.	2.84	1.11	Moderately Difficult
9. I find it difficult to remember which tone goes with a Mandarin word.	3.36	0.95	Moderately Difficult
10. I find it difficult to remember the meanings of new Mandarin words.	2.72	0.94	Moderately Difficult
11. I forget new Mandarin words after a short time.	2.40	0.76	Slightly Difficult
12. I need to review many times before I can remember a new Mandarin word.	2.40	0.87	Slightly Difficult

13. I find it difficult to use Mandarin words in the correct sentence.	2.72	1.10	Moderately Difficult
14. I find it difficult to choose the correct Mandarin word for a situation.	2.80	1.00	Moderately Difficult
15. I find it difficult to understand the meaning of a Mandarin word when it is used in a sentence.	2.60	1.08	Moderately Difficult
16. I find it difficult to pronounce words with third tone followed by another third tone.	3.00	1.04	Moderately Difficult
17. I find it difficult to pronounce words with the final sounds l, u, and ü.	2.48	1.00	Slightly Difficult
Over-all	2.77	0.10	Moderately Difficult

*** Legend:**

Rating	Scale Range	Verbal Description
5	4.20 – 5.00	Extremely Difficult
4	3.40 – 4.19	Very Difficult
3	2.60 – 3.39	Moderately Difficult
2	1.80 – 2.59	Slightly Difficult
1	1.00 – 1.79	Not Difficult at All

The respondents experienced a moderate level of difficulty in learning Chinese-Mandarin vocabulary, with an overall weighted mean of 2.77. The findings show that the respondents' difficulties were not limited to remembering word meanings. Instead, several of the more difficult areas involved the connection among tone, pronunciation, character form, and meaning.

The highest-rated difficulty was remembering which tone goes with a Mandarin word, with a weighted mean of 3.36. This was followed by recognizing Chinese characters, with a weighted mean of 3.24, and telling similar Chinese characters apart, with a weighted mean of 3.04. These findings identify tone recall and character recognition as the most prominent difficulty areas reported by the respondents.

Pronouncing a word with a third tone followed by another third tone obtained a weighted mean of 3.00. This result shows that tone-related pronunciation was also among the areas in which respondents experienced difficulty.

The remaining indicators were interpreted as moderately or slightly difficult. Overall, the results show that the respondents experienced difficulties across several connected dimensions of Mandarin vocabulary learning, particularly tone recall, character recognition, visual discrimination, and pronunciation.

The quantitative findings therefore identify the specific vocabulary learning areas that required greater support among the respondents.

Vocabulary Learning Strategies Used by the Respondents

Table 7: Frequency of Use of Memory Strategies in Mandarin Vocabulary Learning

Indicators	Students		
	Weighted Mean*	SD	Verbal Description*
1. I use flashcards – or word cards to remember new Mandarin words	1.60	0.76	Never
2. I connect new Mandarin words with pictures, actions, or stories.	2.92	0.95	Sometimes
3. I group Mandarin words by topic, such as food, school, or family.	3.12	1.30	Sometimes
4. I repeat a new Mandarin word together with its meaning to help me remember it.	3.84	1.21	Often
Over-all	2.87	0.25	Sometimes

* Legend:

Rating	Scale Range	Verbal Description
5	4.20 – 5.00	Always
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Rarely
1	1.00 – 1.79	Never

Memory strategies were used sometimes. The detailed responses indicate that learners used repetition and meaning-based connections, while some more structured memory tools were used less frequently. This suggests that students relied on familiar memory practices but did not consistently use a wide range of memory techniques.

Table 8: Frequency of Use of Cognitive Strategies in Mandarin Vocabulary Learning

Indicators	Students		
	Weighted Mean*	SD	Verbal Description*
1. I say new Mandarin words aloud many times.	2.80	1.00	Sometimes

2. I practice using new Mandarin words in short sentences.	2.92	0.91	Sometimes
3. I pay attention to pinyin, sounds, or familiar parts of a word to help me learn it.	3.52	1.16	Often
4. I write new words or characters several times to help me remember them.	3.32	1.14	Sometimes
5. I try to write Chinese character with the correct steps.	2.92	1.08	Sometimes
Over-all	3.10	0.10	Sometimes

* Legend:

Rating	Scale Range	Verbal Description
5	4.20 – 5.00	Always
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Rarely
1	1.00 – 1.79	Never

Cognitive strategies obtained the highest overall position among the strategy dimensions. The respondents commonly engaged directly with vocabulary through practices such as repetition, paying attention to pinyin or sounds, writing, reading, and contextual use.

Table 9: Frequency of Use of Metacognitive Strategies in Mandarin Vocabulary Learning

Indicators	Students		
	Weighted Mean*	SD	Verbal Description*
1. I plan when I will study Mandarin vocabulary.	2.76	1.20	Sometimes
2. I review old Mandarin words regularly.	2.92	0.91	Sometimes
3. I check my mistakes so I can improve.	3.28	1.17	Sometimes
4. I choose the study method that helps me learn best.	3.12	1.39	Sometimes
Over-all	3.02	1.17	Sometimes

* Legend:

Rating	Scale Range	Verbal Description
--------	-------------	--------------------

5	4.20 – 5.00	Always
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Rarely
1	1.00 – 1.79	Never

Metacognitive strategies were used sometimes. These strategies involved planning learning activities, reviewing vocabulary, monitoring mistakes, and considering useful ways to study. The results suggest that students showed some awareness of managing their learning but did not use these practices consistently.

Table 10: Frequency of Use of Social Strategies in Mandarin Vocabulary Learning

Indicators	Students		
	Weighted Mean*	SD	Verbal Description*
1. I ask my teacher when I do not understand a Mandarin word.	2.80	1.08	Sometimes
2. I ask my classmates for help when learning new Mandarin words.	3.32	0.91	Sometimes
3. I practice Mandarin vocabulary with classmates, friends, or family members.	2.96	1.17	Sometimes
4. I join pair or group activities to practice new Mandarin words.	2.44	1.39	Rarely
Over-all	2.88	1.17	Sometimes

* Legend:

Rating	Scale Range	Verbal Description
5	4.20 – 5.00	Always
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Rarely
1	1.00 – 1.79	Never

Social strategies were also used sometimes. Students reported seeking help from teachers, classmates, and other people, although collaborative practices were not equally common among all respondents.

Table 11: Frequency of Use of Affective Strategies in Mandarin Vocabulary Learning

Indicators	Students		
	Weighted Mean*	SD	Verbal Description*
1. I try to stay calm when a Mandarin word is difficult.	3.36	1.15	Sometimes
2. I encourage myself to keep trying when I make mistakes.	3.60	1.04	Often
3. I use games or fun activities to make vocabulary learning easier.	2.64	1.25	Sometimes
4. I give myself a small reward after finishing vocabulary practice.	2.40	1.38	Rarely
Over-all	3.00	1.21	Sometimes

* Legend:

Rating	Scale Range	Verbal Description
5	4.20 – 5.00	Always
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Rarely
1	1.00 – 1.79	Never

Affective strategies were used sometimes. The findings indicate that students used encouragement and other approaches to continue learning when vocabulary became difficult, but these strategies were not applied as consistently as direct cognitive strategies.

Table 12: Summary of Vocabulary Learning Strategy Dimensions

Vocabulary Learning Strategy Dimension	Weighted Mean	SD	Verbal Description	Rank
Cognitive Strategies	3.10	0.10	Sometimes	1
Metacognitive Strategies	3.02	1.17	Sometimes	2
Affective Strategies	3.00	1.21	Sometimes	3
Social Strategies	2.88	1.17	Sometimes	4
Memory Strategies	2.87	0.25	Sometimes	5
Overall Mean	2.97		Sometimes	

* Legend:

Rating	Scale Range	Verbal Description
5	4.20 – 5.00	Always

4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Rarely
1	1.00 – 1.79	Never

The summary shows that vocabulary learning strategies were used sometimes overall, with an overall weighted mean of 2.97. Cognitive strategies ranked first, followed by metacognitive strategies, affective strategies, social strategies, and memory strategies.

The ranking shows that the respondents more frequently used direct learning actions than the other strategy dimensions. The quantitative results indicate that repetition, attention to pinyin and sounds, writing, reading, and sentence-related activities were among the practices used by the respondents.

Overall, the quantitative findings describe a pattern in which the respondents used several vocabulary learning strategies, but the frequency of use across the strategy dimensions remained at the level interpreted as sometimes.

Qualitative Results

Table 13: Profile of Interview Participants and Reported Vocabulary Learning Concerns

Participant Code	Length of Mandarin Study	Reported Difficult Area	Reported Most Used Strategy
P1	Since kindergarten	Meaning and tone recall	Repeating word and meaning
P2	Since Grade 1	Chinese characters	Repetition
P3	4 years	Tones and character memorization	Writing and exercises
P4	Since Grade 1	Tones, meaning, and sentence use	Rewriting and grouping
P5	6 years	Meaning and pronunciation	Practice before assessment
P6	6 years	Character recall	Repeating words with meaning
P7	3 years	Tone recall	Writing, sentence use, and pictures
P8	Not clearly stated	Meaning and character recall	Reading and reviewing

P9	6 years	Pronunciation and tones	Repetition
P10	6 years	Character recognition and meaning	Apps and video-based practice

Table 14: Significant Statements and Formulated Meanings

Research Focus	Participant Code	Significant Statement	Formulated Meaning
Tone difficulty	P7	"I struggle to remember tones usually because I feel like I don't practice it enough."	The participant links tone difficulty with limited practice.
Character recognition	P2	"Learning the characters are the hardest for me because it's hard for me to remember."	The participant finds Chinese characters difficult because of memory demands.
Character recognition	P10	"Without the pinyin, I don't understand."	The participant depends on pinyin to understand characters.
Pronunciation	P4	"Saying the word chí, zhí, jí is hard because when I say it, it is similar."	The participant confuses similar-sounding Mandarin words.
Vocabulary meaning	P1	"Remembering the meaning is hard because the pinyins are complicated and sometimes I get it mixed up."	The participant connects meaning difficulty with confusion in pinyin.
Strategy use	P6	"Repeating the words with meaning helps me more to understand the words."	The participant uses repetition with meaning as a memory strategy.
Digital support	P10	"I watched YouTube videos of someone explaining a	The participant uses online videos to support vocabulary

		Mandarin word and its meaning.”	learning.
Motivation	P4	“Taking a short break to relax myself so my mind is clear.”	The participant uses short breaks to manage learning difficulty.

Table 15: Clustered Meanings and Emerging Themes from the Interview Data

Clustered Meanings	Emerging Theme
Students reported difficulty remembering tones, saying tones correctly, and hearing tone differences when speech is fast.	Theme 1: Difficulty Linking Mandarin Tones with Vocabulary Meaning
Students reported difficulty remembering Chinese characters, telling similar characters apart, and understanding characters without pinyin.	Theme 2: Dependence on Pinyin in Character Recognition and Meaning Recall
Students reported confusion with similar Mandarin sounds and unfamiliar words, especially when the words sound alike.	Theme 3: Pronunciation Confusion in Similar-Sounding Mandarin Words
Students used repetition, rewriting, reading, sentence-making, and pictures to remember new words.	Theme 4: Repetition and Writing as Common Vocabulary Learning Strategies
Students used apps, Google Translate, YouTube, AI, teachers, parents, siblings, and course teachers when words were difficult.	Theme 5: Human and Digital Support in Vocabulary Learning
Students used games, short breaks, rewards, snacks, and self-encouragement to stay motivated.	Theme 6: Motivation Through Enjoyable and Low-Pressure Activities

The qualitative follow-up findings described how the interview participants experienced Mandarin vocabulary learning in their own words. Across the ten interview participants, recurring concerns involved tone recall, character recognition, pinyin dependence, pronunciation, meaning recall, and the use of vocabulary in sentences.

Theme 1: Difficulty in Remembering Mandarin Tones. Tone difficulty appeared repeatedly in the qualitative accounts. Students described situations in which they knew or partly remembered a word but were uncertain about its tone. This theme corresponded with the quantitative finding that remembering which tone belongs to a word was the highest-rated difficulty.

Theme 2: Challenges in Recognizing Chinese Characters and Reliance on Pinyin. Character recognition was also a recurring concern. Some learners described relying on pinyin when they could not immediately recognize a character. Their accounts provided additional detail about the quantitative findings on character recognition and distinguishing similar characters.

Theme 3: Repetition, Practice, and Social or Digital Support. The respondents described several practical strategies, including repetition, rewriting, reading, sentence-making, pictures, applications, videos, and other digital resources. Students also described seeking assistance from teachers, parents, siblings, classmates, and course teachers.

Theme 4: Motivation and Emotional Support in Vocabulary Learning. Motivation and emotional support also appeared in the qualitative data. Some students mentioned games, short breaks, rewards, snacks, and self-encouragement as ways of continuing when vocabulary learning became difficult.

Integration of Quantitative and Qualitative Results

Table 16: Joint Display of Quantitative Findings and Qualitative Themes

Quantitative Finding	Related Qualitative Theme	Sample Supporting Statement	Qualitative Connection
Remembering which tone goes with a Mandarin word had the highest difficulty mean.	Theme 1: Difficulty Linking Mandarin Tones with Vocabulary Meaning	"I struggle to remember tones usually because I feel like I don't practice it enough."	Interview responses show that tone difficulty is linked with limited practice and confusion between similar tones.
Recognizing Chinese characters was rated moderately difficult.	Theme 2: Dependence on Pinyin in Character Recognition and Meaning Recall	"Without the pinyin, I don't understand."	Interview responses show that some students rely on pinyin when identifying characters and meanings.
Saying Mandarin sounds correctly was rated moderately difficult.	Theme 3: Pronunciation Confusion in Similar-Sounding Mandarin Words	"Chí, zhí, jí is hard because when I say it, it is similar."	Interview responses show that students experience difficulty with words that sound close to one another.

Repeating a new Mandarin word together with its meaning was rated often.	Theme 4: Repetition and Writing as Common Vocabulary Learning Strategies	“Repeating the words with meaning helps me more to understand the words.”	Interview responses show that repetition with meaning is one of the most used ways to remember vocabulary.
Using games or fun activities was rated sometimes.	Theme 6: Motivation Through Enjoyable and Low-Pressure	“Games help me to be more focused and easy to remember.”	Interview responses show that games and short breaks are used by some students to remain motivated.

The integration of the quantitative and qualitative findings shows convergence between the two phases of the study. The survey identified tone recall as the highest-rated vocabulary difficulty, while the interviews described confusion between tones and the need for additional practice to remember them accurately.

The survey findings on character recognition and visually similar characters were also supported by qualitative accounts of pinyin dependence and difficulty recalling character forms. The interview findings provided additional explanation of how students used pinyin when character recognition was uncertain.

The quantitative finding on pronunciation difficulty was complemented by interview accounts of confusion among similar sounds and uncertainty when using vocabulary orally. Similarly, the reported use of repetition was reflected in interview responses describing repeated practice as a way to remember and understand vocabulary.

Taken together, the integrated findings show that the quantitative and qualitative data complement one another. The survey identified the major patterns and priority areas, while the interviews explained how students experienced these difficulties and the strategies they used in response.

DISCUSSION

The demographic findings provide an important context for interpreting the results. The respondents were Grade 6 Indonesian learners, most of whom were 12 years old and had studied Mandarin for four years or more. Their relatively long exposure to Mandarin suggests that the reported difficulties should not be interpreted simply as the result of being complete beginners. Instead, the findings identify specific areas that may remain challenging even after several years of classroom contact.

The most important quantitative finding was the moderate overall level of difficulty in Mandarin vocabulary learning and the particularly high difficulty associated with tone recall. This result supports the view that vocabulary learning in Mandarin involves more than learning a sequence of sounds and a translation. A learner may need to remember the sound pattern, tone, pinyin, character, meaning, and possible use of a word. When one part of this connection is weak, retrieval may become difficult. Pelzl (2019) provides relevant support for the interpretation that Mandarin tone perception presents distinctive challenges for second-language learners.

Character recognition was another major concern. The results showed difficulty in recognizing characters and distinguishing visually similar forms, while the interviews revealed reliance on pinyin when character recognition was uncertain. This suggests that instruction should help learners move repeatedly among pinyin, sound, character, and meaning. Olmanson et al. (2021) provide related evidence that character recognition and literacy development require deliberate instructional attention.

The strategy findings showed that the respondents did not lack strategies entirely. Instead, they used a range of strategies at a frequency interpreted as sometimes. Cognitive strategies ranked first, indicating that students often relied on direct engagement with vocabulary. The interview data supported this pattern through repeated references to repetition, writing, reading, and sentence-making. Adam and Magfirah (2022) and Chiew and Ismail (2021) similarly support the importance of direct strategy use in vocabulary learning.

Metacognitive, affective, social, and memory strategies also appeared in the respondents' learning experiences, although they were not used as consistently as cognitive strategies. This suggests that teachers should not merely tell students to study more. Instead, learners may benefit from explicit instruction on how to plan review, monitor mistakes, organize vocabulary practice, seek appropriate assistance, and maintain motivation.

The qualitative findings are particularly important because they prevent the numerical results from being interpreted too narrowly. For example, a moderate difficulty score for character recognition does not simply mean that students cannot recognize characters. The interviews show how this difficulty is connected with pinyin use, memory, meaning recall, and the practical strategies available to learners. Likewise, tone difficulty is connected with practice opportunities and confidence in recalling the correct tone.

The findings on technology also deserve attention. Students reported using applications and videos as part of their learning practices. Previous studies suggest that mobile-assisted learning, multimodal video resources, and technology-supported practice can provide useful support for vocabulary learning (Astutiningtyas et al., 2023; Pagadala, 2019). However, the present findings suggest that technology should complement rather than replace guided instruction. Digital resources can provide repetition and multimodal input, while teachers can help learners connect those resources with correct pronunciation, tone, character recognition, and contextual use.

The social dimension of vocabulary learning was also visible in the interview findings. Students sought assistance from teachers, parents, siblings, classmates, and other learning resources. This means that vocabulary development may be strengthened through carefully structured peer activities and home-supported review. Social support can be particularly useful when learners need immediate clarification of pronunciation, meaning, or character recognition.

The affective findings show that motivation should not be separated from vocabulary instruction. Some students used games, rewards, snacks, breaks, and self-encouragement to continue learning. These practices suggest that enjoyable and manageable activities may help younger learners sustain attention and effort. These practices indicate that enjoyable and manageable activities should be considered when designing vocabulary instruction for young learners.

The mixed-methods design strengthened the study by allowing the quantitative and qualitative phases to complement one another. The survey identified priority areas, while the interviews explained how those areas were experienced by the learners. The integration therefore produced a clearer basis for intervention than either data set could have provided alone.

The findings should nevertheless be interpreted within the limits of the study. The respondents came from one specific Grade 6 learner group, and some findings were based on self-reported perceptions and practices. Individual differences in proficiency, motivation, learning history, and support systems may influence vocabulary learning. Future studies involving larger and more diverse groups may determine whether similar patterns appear across other Indonesian educational contexts.

Conclusions

Based on the findings, the study concludes that the respondents were a specific group of Grade 6 Indonesian learners with prior exposure to Mandarin. Most of them were 12 years old, all were Grade 6 students, and most had studied Mandarin for four years or more. Their most recent Mandarin grades were varied, which shows that long exposure to Mandarin did not result in the same level of performance for all learners.

The respondents experienced a moderate level of difficulty in Mandarin vocabulary learning. The most difficult area was remembering which tone goes with a Mandarin word, followed by recognizing Chinese characters, telling similar characters apart, and pronouncing words with third tone followed by another third tone. These findings show that the main vocabulary concerns were linked with tone recall, character recognition, pronunciation, and the connection between form and meaning. Meanwhile, repeating a new Mandarin word after hearing it, forgetting new words after a short time, needing many reviews, and pronouncing the final sounds i, u, and ü were rated as slightly difficult.

The respondents used vocabulary learning strategies at a moderate level. Cognitive strategies ranked first, followed by metacognitive, affective, social, and memory strategies. Among the specific strategies, repeating a Mandarin word together with its

meaning and paying attention to pinyin, sounds, or familiar word parts were used more often. In contrast, flashcards or word cards were not commonly used, while pair or group activities and small self-rewards were used less often. These findings show that the respondents used several strategies, but the use of these strategies was not equally frequent.

The qualitative follow-up findings supported the survey results. The interview responses showed that students had difficulty with tones, characters, pinyin, pronunciation, meaning recall, and sentence use. The participants also reported using repetition, rewriting, reading, sentence-making, pictures, apps, videos, teachers, parents, siblings, and course teachers to support vocabulary learning. Some students also used games, breaks, rewards, snacks, and self-encouragement to stay motivated when learning difficult Mandarin words.

The integration of quantitative and qualitative findings showed that the survey results and interview themes were connected. The highest difficulty in tone recall was clarified by interview responses about limited practice and confusion with similar tones. The moderate difficulty in character recognition was clarified by learners' reliance on pinyin. The moderate difficulty in pronunciation was clarified by confusion with similar-sounding Mandarin words. The frequent use of repetition with meaning was also supported by interview responses showing that students used this strategy to remember and understand vocabulary.

Recommendations

Mandarin teachers may give more focused support for tone recall and tone production. Short and regular tone drills may be used, especially for words whose meanings change when the tone changes. Teachers may also provide more guided pronunciation practice for similar-sounding Mandarin words so that learners can hear, say, and compare the sounds more clearly.

Teachers may strengthen activities that connect pinyin, Chinese characters, meanings, and sentence use. Since the respondents reported difficulty recognizing characters and understanding meanings without pinyin, vocabulary lessons may include pinyin-to-character matching, character comparison, picture support, and sentence-building tasks. These activities may help learners connect word form, sound, meaning, and use in context.

Teachers may also make vocabulary strategy use more structured. Since students used repetition with meaning and attention to pinyin more often, these strategies may be retained and improved through vocabulary logs, guided review sheets, and short practice routines. Less-used strategies, such as flashcards, pair work, and group activities, may be redesigned as games or collaborative tasks so they become more engaging for young learners.

Students may be encouraged to review Mandarin vocabulary regularly instead of studying mainly before assessments. They may use simple study schedules, self-

checklists, and mistake logs to monitor their learning. They may also combine repetition, writing, sentence use, pictures, and digital tools so that vocabulary practice becomes more complete.

Parents, siblings, and course teachers may continue to support learners by helping them review difficult words, pronounce words correctly, and understand meanings. Since some respondents already asked family members, teachers, apps, and AI tools for help, learning support may be strengthened when these sources are used responsibly and with teacher guidance.

Future researchers may conduct a similar study with a larger group of Indonesian learners from different grade levels or school settings. They may also examine whether a structured Mandarin vocabulary program that combines tone drills, pinyin-character practice, sentence-making, review logs, and game-based activities can reduce vocabulary learning difficulties and improve strategy use over time.

Table 17: Proposed Mandarin Vocabulary Support Plan

Area for Intervention	Numerical Basis from the Findings	Intervention Activity	Expected Output
Tone recall and tone-word connection	Remembering which tone goes with a Mandarin word obtained the highest difficulty mean of 3.36.	Conduct short tone drills using familiar vocabulary. Each word should be practiced with its pinyin, tone mark, meaning, and sample sentence.	Students become more familiar with the tone attached to each vocabulary word.
Pronunciation of difficult tones and similar sounds	Saying Mandarin tones correctly obtained a weighted mean of 2.84, and pronouncing words with third tone followed by another third tone obtained 3.00.	Use listen-and-repeat exercises, teacher modeling, slow pronunciation practice, and similar-sound comparison activities.	Students practice clearer pronunciation of tones and similar-sounding Mandarin words.
Character recognition and meaning recall	Recognizing Chinese characters obtained a weighted mean of 3.24, and matching a Chinese character with its meaning obtained	Use pinyin-to-character matching, character-to-meaning matching, picture support, and short recognition quizzes.	Students improve recognition of characters and connect them with meanings.

	2.76.		
Similar Chinese characters	Telling similar Chinese characters apart obtained a weighted mean of 3.04.	Present similar characters side by side and ask students to compare strokes, meanings, pinyin, and sample words.	Students become more aware of the visual differences between similar characters.
Contextual word use	Using Mandarin words in the correct sentence obtained a weighted mean of 2.72, and choosing the correct Mandarin word for a situation obtained 2.80.	Use sentence frames, guided sentence-making, and short role-play tasks using target vocabulary.	Students practice using Mandarin vocabulary in correct and meaningful contexts.
Flashcard use	Flashcards or word cards obtained the lowest strategy mean of 1.60 and was described as never used.	Redesign flashcards as picture-based, tone-marked, and game-based cards. Students may use them for matching, guessing, and peer review.	Flashcards become more engaging and more useful for vocabulary recall.
Pair and group vocabulary practice	Joining pair or group activities obtained a weighted mean of 2.44 and was described as rarely used.	Use pair drills, vocabulary partner checks, team quizzes, and short group games such as Kahoot, Bamboozle, or Simon Says.	Students increase vocabulary practice through guided peer interaction.
Motivation and self-support	Giving oneself a small reward obtained a weighted mean of 2.40 and was described as rarely used.	Use simple progress trackers, praise, short breaks, and small non-material rewards after completing vocabulary tasks.	Students become more willing to continue practicing difficult vocabulary.
Digital vocabulary	Interviews showed	Guide students in	Students use digital

support	that some students used Duolingo, Google Translate, YouTube, apps, and AI for help.	using approved digital tools for pronunciation listening, pinyin checking, vocabulary review, and meaning practice.	tools more responsibly and with clearer learning purpose.
---------	---	---	---

The proposed intervention plan may be implemented through short and regular classroom routines. Each lesson may begin with a five-minute tone and pronunciation drill, followed by pinyin-character-meaning matching, sentence practice, and a short vocabulary game or peer activity. This structure directly addresses the highest difficulty areas while also improving the least-used strategies. The plan may help Mandarin teachers provide more focused vocabulary support, especially in tone recall, character recognition, pronunciation, meaning recall, and sentence use.

Compliance with Ethical Standards

Before commencing the study, the researcher sought ethical clearance from the appropriate ethics review committee. Ethical clearance for this study was obtained from the Angeles University Foundation Ethics Review Committee. The application for ethical clearance included the detailed research proposal, informed consent forms, and participant information sheets to ensure that the study complied with established ethical standards and protected the rights, welfare, privacy, and confidentiality of all participants.

The Angeles University Foundation Ethics Review Committee reviewed the research protocol and ethical procedures to ensure the study complied with applicable ethical principles and guidelines. Approval was obtained before data collection and before participants were involved in the study.

Sekolah Mutiara Harapan served as the research site. The appropriate school authorities granted permission to conduct the research within the school. The school's role was separate from that of the ethics review committee, as it did not provide ethical clearance for the study.

Participants were selected fairly and without bias. Participants were selected based on the established inclusion criteria, ensuring that only qualified participants were included in the study. The researchers ensured that no particular group was disproportionately burdened or excluded without appropriate justification. Participation in the study was voluntary, and participants were informed of their right to withdraw at any time without penalty or negative consequences. All information collected from participants was treated with confidentiality and used solely for the purposes of the study.

Informed Consent Process, Duration of Participation, and Withdrawal Criteria

The principle of informed consent is central to ethical research. All participants in this study were provided with detailed information about the research objectives, procedures, potential risks, and benefits. Participants were informed that their participation was voluntary and that they had the right to withdraw from the study at any time without penalty. As the participants were minors, written informed consent was obtained from parents or legal guardians. In addition, age-appropriate assent was obtained from all Grade 6 student participants through a written assent form or verbal assent. Students were provided with a clear, child-friendly explanation of the study and were informed of their right to decline or withdraw at any time without consequences. Written consent forms were obtained from all participants, ensuring that they fully understood the nature and purpose of the research.

Risks and Inconveniences

The study was designed to minimize any potential harm to the participants. Given that the research involved surveying students about their learning strategies and difficulties, the questions were framed in a non-intrusive and sensitive manner. The potential psychological impact of discussing learning difficulties was considered, and appropriate support was offered to participants if needed.

Benefits of the Study

No incentives, compensation, or reimbursement were offered to students who took part in this study. Participation was entirely voluntary and choosing to participate or not had no effect on students' academic performance, class placement, or their relationship with teachers or the school.

Privacy, Confidentiality, and Data Management

Maintaining the confidentiality and anonymity of the participants was crucial. Personal information collected during the study, such as age, gender, and academic performance, was kept confidential and used solely for research purposes. Data were anonymized to prevent the identification of individual participants. Any publications or presentations resulting from the study did not disclose any personal identifiers. All collected data were retained for one year after the completion of the study and were then securely disposed of. Digital files were permanently deleted, and any physical documents were shredded to ensure complete protection of participant information.

Conflict of Interest

Transparency and integrity were maintained throughout the research process. Participants were informed of the study's findings upon completion, and any conflicts of interest were disclosed. The researcher adhered to the highest standards of academic honesty and rigor, ensuring that the data were accurately reported and analyzed.

Overall, adherence to these ethical considerations ensured that the research was conducted responsibly and ethically, respecting the rights and well-being of all participants involved. This approach not only upheld the integrity of the research but also strengthened the validity and reliability of the study's findings.

REFERENCES

- Adam, S., & Magfirah, S. (2022). Vocabulary strategies for English learners. *ELS Journal on Interdisciplinary* Adam, S., & Magfirah, S. (2022). Vocabulary strategies for English learners. *ELS Journal on*
- Astutiningtyas, D., Rohmah, Z., & Hamama. (2023). Learning Mandarin using multimodal-based video media. *Santhet: Jurnal Sejarah Pendidikan Dan Humaniora*, 7. <https://doi.org/10.36526/santhet.v7i2.1954>
- Chiew, M. T. L., & Ismail, H. H. (2021). Exploring vocabulary learning strategies in a second language setting: A review. *International Journal of Academic Research in Business and Social Sciences*. <https://doi.org/10.6007/ijarbss/v11-i12/11376>
- Ghafar, Z., & Mohamedamin, A. A. (2022). Vocabulary acquisition techniques to learn second language English speakers: A literature review. *International Journal of Middle Eastern Research*. <https://doi.org/10.32996/ijmer.2022.1.1.3>
- Hasel, C. A. (2022). The research comparison between the consonants of Bahasa Indonesia and Chinese Mandarin. *MANDARINABLE: Journal of Chinese Studies*. <https://doi.org/10.20961/mandarinable.v1i1.322>
- Ivanovska, B., & Xhaferi, G. (2023). Second language vocabulary acquisition and learning strategies. *Folia Linguistica et Litteraria*. <https://doi.org/10.31902/fl.44.2023.21>
- Lertola, J. (2019). Second language vocabulary learning through subtitling. *Revista Española de Lingüística Aplicada/Spanish Journal of Applied Linguistics*. <https://doi.org/10.1075/resla.17009.ler>
- Lianisyah, U. Y., Sugiarti, T., & Rudiansyah. (2022). Analisis motivasi dan kesulitan belajar bahasa Mandarin mahasiswa Indonesia non-keturunan Tionghoa di Universitas Sebelas Maret Indonesia. *Jurnal Cakrawala Mandarin*, 6. <https://doi.org/10.36279/apsmi.v6i2.189>
- Nur, R. M., & Jusoh, Z. (2022). Vocabulary learning strategies of Indonesian EFL learners in Malaysia: A focus on gender. *International Journal of English and Applied Linguistics (IJEAL)*. <https://doi.org/10.47709/ijeal.v2i3.1868>
- Nurhusna, N., Rahmanita, R., & Sakinah, Z. (2024). Difficulties of Javanese ethnic students pronouncing Mandarin vocabulary in the Department of Chinese Language and Culture at Universitas Sebelas Maret, Surakarta. *Journal of Maobi*, 2(2), 176–182. <https://doi.org/10.20961/maobi.v2i2.91294>
- Olmanson, J., Liu, X. C., Heselton, C. C., Srivastava, A., & Wang, N. (2021). Chinese character recognition and literacy development via a techno-pedagogical pivot. *Educational Technology Research and Development*, 69(2), 1299–1324. <https://doi.org/10.1007/s11423-021-09976-5>
- Pagadala, A. M. (2019). Second language vocabulary acquisition through mobile assisted language learning. *Think India*. <https://doi.org/10.26643/think->

india.v22i2.8746

- Pascual, L. C., Dionisio, G., & Ilustre, R. G. (2022). Vocabulary acquisition and learning strategies in second language learning: A review paper. *International Journal of English Language Studies*. <https://doi.org/10.32996/ijels.2022.4.3.9>
- Pelzl, E. (2019). What makes second language perception of Mandarin tones hard? *Chinese as a Second Language (漢語教學研究—美國中文教師學會學報)*. <https://doi.org/10.1075/csl.18009.pel>