L1 VOCABULARY KNOWLEDGE IN LEARNING JAPANESE KANJI AMONG MALAY STUDENTS

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FACULTY OF LANGUAGES AND LINGUISTICS
UNIVERSITY OF MALAYA
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ABSTRACT

This study examines the effectiveness of Malay as a learner's first language in the teaching and learning of Chinese characters ("Kanji") in Japanese. Three vocabulary tests were administered to groups of 142, 107, and 116 native Malay-speaking Malaysian university students, respectively. Most participants had no previous knowledge of Japanese and others were beginners. The experimental group was provided with a list including written instructions in Malay and Japanese words which respectively comprised 30, 28, and 28 frequently used Kanji. The control group was given a list with the same words but without such instructions. The listed vocabulary was presented to the experimental group as pairs of two similar words. Each pair included a common component that indicated semantic similarities between Japanese and Malay. Moreover, each pair of Malay counterparts presented in the list shared a common word including meanings similar to the listed Japanese words. All participants were given 30 minutes to learn the words and another 30 minutes to answer identical multiple-choice tests comprised of 30, 28, and 28 questions, respectively. At a 5% significance level, a significant difference was found between the scores of the experimental and control groups in both tests ($p < 0.001$, $t = 5.350$; $p < 0.001$, $t = 6.893$; $p < 0.001$, $t = 8.099$). From the abovementioned results, this study concludes that explicit presentation of similarities between Japanese words and their Malay equivalents, accompanied by written instructions on the similarities in the learner's first language helps Malay-speaking students to learn Chinese characters in Japanese.

ABSTRAK

Penyelidikan ini mengkaji keberkesanan bahasa Melayu sebagai bahasa pertama para pelajar di dalam pengajaran dan pembelajaran aksara Cina ("Kanji") yang digunakan di dalam bahasa Jepun. Tiga ujian perbendaharaan kata telah dijalankan ke atas 142, 107 dan 116 orang pelajar berbahasa Melayu sebagai bahasa ibunda dari universiti di Malaysia, masing-masing. Kebanyakan peserta-peserta ini tiada pengetahuan mengenai bahasa Jepun dan sebahagian yang lain pada peringkat permulaan. Kumpulan eksperimen disediakan dengan satu senarai termasuk arahan bertulis mengenai perkataan bahasa Melayu dan bahasa Jepun yang terdiri daripada 30, 28 dan 28 buah Kanji yang kerap digunakan. Kumpulan kawalan diberikan satu senarai dengan perkataan yang sama tetapi tanpa penjelasan. Perbendaharaan kata yang disenaraikan telah ditunjukkan kepada kumpulan eksperimen sebagai pasangan daripada dua perkataan yang serupa. Setiap pasangan perkataan tersebut mengandungi komponen yang sama iaitu menunjukkan persamaan semantik antara bahasa Jepun dan bahasa Melayu. Selain itu, setiap pasangan terjemahan bahasa Melayu yang disenaraikan akan berkongsi sepatah perkataan yang sama termasuk makna yang serupa melalui perkataan bahasa Jepun yang disenaraikan. Peserta diberikan 30 minit untuk belajar perkataan-perkataan tersebut dan 30 minit seterusnya untuk menjawab soalan pelbagai pilihan yang sama, masing-masing mengandungi 30, 28 dan 28 soalan. Pada aras keertian 5%, perbezaan yang signifikan didapati antara markah kumpulan eksperimen dan kawalan dalam kedua-dua ujian ($p < 0.001$, $t = 5.350$; $p < 0.001$, $t = 6.893$; $p < 0.001$, $t = 8.099$). Melalui keputusan yang diperolehi, penyelidikan ini menyimpulkan bahawa penyampaian yang jelas mengenai persamaan antara perkataan bahasa Jepun dan bahasa Melayu, disertakan dengan penjelasan bertulis tentang persamaan dalam bahasa pertama para pelajar, bagi membantu pelajar yang berbahasa Melayu untuk mempelajari aksara Cina dalam bahasa Jepun.

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LIST OF ABBREVIATIONS

(adj.) adjective

(adv.) adverb

JFL Japanese as a Foreign Language

JLPT Japanese-Language Proficiency Test

L1 First Language

L2 Second Language

MDH Markedness Differential Hypothesis

(n.) noun

SPM *Sijil Pelajaran Malaysia* (Malaysian Certificate of Education)

(v.) verb

CHAPTER 1: INTRODUCTION

1.1 Introduction

Learning vocabulary is one of the most important elements in language learning. According to a 2015 survey by the Japan Foundation (2017, p. 13), 33,224 Malaysians have studied the Japanese language, and the number of learners and textbooks has been increasing. Despite the increase in Japanese learners, Japanese remains a difficult language to learn for many. One of the main reasons for this difficulty is the use of Chinese characters in the Japanese language ("Kanji"). This study hereafter employs the term "Kanji" for Chinese characters used in the current Japanese language.

Chikamatsu (2005) indicates that learners of Japanese as a foreign language (JFL), particularly, whose first language has a phonological writing system, such as the Latin alphabet, frequently face difficulties in learning Kanji characters. This is because Chinese characters do not have systematic one-to-one correspondence between their components and pronunciation. Furthermore, many of the characters have multiple readings. For example, the character 男 ("man") can be pronounced *o* (as part of a name), *otoko* (as an original Japanese word), and *dan* (as a Chinese-origin pronunciation) according to the contexts and positions of the character in a word (pp. 71–72). Koike (2003, p. 800) states that "to teach numerous Chinese characters, it is necessary to semantically connect characters that students have already learned and give instructions on components indicating meaning and components related to pronunciation included in the characters."

A learner's first language has a considerable impact on the processes of second language (L2) acquisition, and many studies have suggested the usefulness of the first language for learning L2 vocabulary (Schmitt & McCarthy, 1997; Swan, 1997; Nation, 2001; Cook and Bassetti, 2005; Ringbom, 2007; Schmitt, 2010) (see Section 2.3 for

details).

Nation (2001, p. 351) states that the use of a learner's first language in vocabulary teaching efficiently informs them of word meanings in a foreign language. It suggests a general utility of explicitly demonstrating foreign language vocabulary and its equivalent words in a learner's first language. For instance, English-origin loanwords in Japanese that continue to retain phonetic similarities could encourage Japanese speakers' learning of English. Daulton (2008) focused on utilizing Japanese English-based loanwords in teaching English as a foreign language. According to Daulton's (2008) study, loanwords included in the most frequent 3,000 words in Japanese especially benefited Japanese learners of English. In Japanese, loanwords from Western languages are spelled with *Katakana*, a type of syllabics that is different from *Hiragana*, the other type of syllabics used to write Japanese. One of the significant findings of Daulton's (2008) study is that it demonstrated that a positive transfer could occur between languages that belong to very different language families such as English and Japanese. In addition, it was proved that despite the difference in scripts, English-based loanwords could benefit Japanese English-language learners. Other studies, such as Ringbom (2007), Gairns and Redman (1986), Swan (1997), and Schmitt (2010), also affirm that learners' vocabulary knowledge in their first language can foster vocabulary learning in a foreign language, in particular, vocabulary items that share phonetic similarities across the languages. Gairns and Redman (1986, p. 48) who discuss the teaching and learning of vocabulary of English as a foreign language state that similarities in prefixes and suffixes between English and learners' first language facilitate comprehension of meanings of English vocabulary including similar affixes. They also point out that the similarities and discrepancies of English and learners' first language are closely related to the amount of time that may be necessary to learn English vocabulary and understanding word formation (p. 49).

In the field of Japanese-as-a-foreign-language (JFL) Kanji learning, many studies have examined and confirmed the impact of a learner's first language on Kanji learning (Mori, 1998, 2014; Koda, 2000, 2005; Perfetti & Liu, 2005; Chikamatsu, 2005, 2006; Toyoda, 2007; Matsumoto, 2013) (see Section 2.5 for details). The learners' knowledge of their first language could support their foreign language learning in different ways. In addition to cross-linguistic phonetic similarities, various linguistic similarities between the first and target languages, such as the writing system of the first language, could encourage language learning. Horiba (2012) compared first-language knowledge types primarily utilized by native Chinese- and Korean-speaking learners of Japanese when developing reading comprehension of Japanese texts. In her study, 50 Chinese and 20 Korean students were asked to complete a word-definition matching test and another test that required them to select three word associates from among seven options for assessing their text comprehension. The results indicated that Chinese-speaking participants mostly depended on Chinese characters and morphemic information to extract meaning from the Japanese texts provided, in which most nouns and the main part of the verbs had been written using Kanji characters (p. 116). In contrast, Korean-speaking participants frequently relied on the syntagmatic information obtained from the Japanese texts provided, such as word order and sentence structure, as these elements in Japanese share a high level of similarity with those in Korean (p. 117).

Over many decades, an abundance of JFL textbooks and learning materials written in English have been published in English-speaking countries and Malaysia. In addition to conventional textbooks and other resources, online materials enable learners to improve their language proficiency autonomously. However, very few JFL teaching and learning materials have been published in the Malay language. Malay is the first language of the Malay people, the principal ethnic group in the majority of Malaysians (Bumiputera), who constitute approximately 68% of the total population of Malaysia

(Department of Statistics Malaysia, 2017). In addition, other groups of Malaysians also possess, at least, Malay language proficiency for everyday communication as they are generally educated in Malay throughout primary and secondary education. Therefore, it would be beneficial to propose a method or approach in which instructions can be provided through Malay and demonstrate similarities between Malay and Japanese.

For example, among European languages, phonetic similarities are frequently observed between vocabularies, such as *university* in English and its French equivalent *université*, as many words originate from classic Latin and ancient Greek (Swan, 1997; Crystal, 2010). Malay and Indonesian belong to the Austronesian language family (Crystal, 2010, p. 328). Japanese, whose origin is still uncertain (Crystal, 2010, p. 316), has an almost completely different vocabulary from Malay. In addition, Malay and Indonesian contain many loanwords from Sanskrit and Arabic (Watson-Andaya & Andaya, 1982, pp. 14, 53), while the main source of Japanese loanwords in ancient times was classical Chinese, which has neither affixes nor a derivation system similar to Malay, Sanskrit, or Arabic. Therefore, Malay, Indonesian, and Japanese share very few words from the same etymology and with phonetic similarities. Nevertheless, semantic similarities can be observed between Malay words and their Japanese equivalents.

The majority of Malay words include a root called *kata dasar* ("basic word") that has a function similar to a stem in a European language. For example, the Malay root *kerja* means "work," and its derivative *pekerja* that includes the nominalizing prefix *pe-* means "worker." A Malay root, which can usually be used independently as a noun or an adjective, and its derivatives have a semantic scope similar (albeit less frequently so) to that of Japanese words that include a common semantic component, which is usually called *bushu* or radical.

Mohd-Hassan (2011) is a Japanese-language textbook for Malay-speaking Japanese beginners used at a major Malaysian university. Throughout the volume, it

only uses *Hiragana* phonetic characters to introduce Japanese words and phrases, and does not present any Kanji characters. Similarly, at another major Malaysian university, Kanji is not taught to Malaysian students during the first semester or academic year (Universiti Malaysia Terengganu, 2016).

Chin et al. (2010), Ismail and Ito (2011), and Lee et al. (2013) are examples of Japanese-language textbooks written in Malay for Malaysian secondary school students (see Section 1.2 for details). In these textbooks, although vocabulary items such as those related to clothes are shown as a unit in the same category, Kanji characters that include a common component are not explicitly presented. For instance, the Malay root *cahaya* means "light" and "shine" as a noun, and its derivative *bercahaya* means "to shine." Their corresponding Japanese words are *hikari* 光 and *kagayaku* 輝く, respectively. The character 輝 meaning "to shine" shares a common semantic component with the character 光 ("light, shine"). Such comparative demonstrations have rarely been found in Japanese textbooks written in Malay; however, they possibly allow Malay-speaking learners of Japanese the opportunity to recognize similarities between Malay and Japanese more efficiently. This would facilitate the learning of Kanji characters.

For these aforementioned reasons, this study aims to utilize semantic similarities that could most efficiently assist Malay-speaking JFL learners in learning Japanese vocabulary, in particular, words including Kanji characters. Written instructions for the experimental group of vocabulary tests of the study will explicitly present semantic similarities between Japanese words and their Malay equivalents.

In addition, this study aims to contribute to the following two fields:

1. JFL teaching and learning, in particular, the learning of Kanji by native Malay-speaking students in Malaysia, using explicit demonstration of semantic Kanji components of selected Japanese words and semantic similarities between Japanese and

Malay words

2. Effects and efficacy of a learner's first language (L1) to facilitate JFL vocabulary teaching and learning in Malaysia

Primarily, Sections 2.3 and 2.5 discuss and analyze previous studies in these fields. This study focuses on a more efficient method of utilizing Malay-speaking Japanese learners' L1 vocabulary knowledge by presenting Japanese Kanji characters and their Malay equivalents that share semantic similarities. To precisely define the study's objective and topic, its scope does not include language learners' metalinguistic knowledge in their L1.

1.2 Problems in Japanese-language teaching in Malaysia

Malays are the principal ethnic group in the majority of Malaysians (Bumiputera), who constitute approximately 68% of the total population of Malaysia (Department of Statistics Malaysia, 2017); they mostly speak Malay as their first language and are neither accustomed to Chinese characters nor to *Kana* phonetic characters. Therefore, Japanese-language textbooks published or used in Malaysia and the teaching of Kanji characters in classrooms have restrictions, such as the number of Kanji characters taught at each level and their number of strokes. Before examining such limitations observed in textbooks published or used in Malaysia, the following paragraph shows an example of simplified demonstration from a textbook in Japan.

Tokyo Shoseki (2011), a Japanese-language textbook for the fourth-year elementary schools in Japan, avoids the use of Kanji characters which are not supposed to have been taught in the first three school years. For example, the Chinese-origin Japanese word 誕生日 ("birthday") which comprises three Kanji is spelled たん生日 (p. 74). The Kanji 誕 pronounced *tan* in Japanese is replaced with two phonetic

characters indicating the same pronunciation. The two other Kanji are shown because they have already been taught. Similarly, the Chinese-origin Japanese word 伝統 is spelled 伝とう for the same reason (p. 102). One of the two Kanji included in Japanese words such as *shinzō* 心臓 (“heart” as an organ) will have already been taught, but both Kanji are fully replaced with *Hiragana* phonetic characters of the same pronunciation (しんぞう) because the whole word is not supposed to have been taught in the previous school years (p. 50).

Similar replacements are also practiced in several Japanese-language textbooks published in Malaysia; however, to a different extent. The principal reason is discrepancies in learning environments between Japan and Malaysia. Another reason is that to learn the appropriate orders of strokes demands much effort from Malay students who are not familiar with Chinese characters. A Malaysian Japanese-language textbook by Mohd-Hassan (2011) is used in elementary-level Japanese classes at a major Malaysian university. It explains basic grammar in Malay and English, demonstrating basic vocabulary items and phrases. However, all Japanese words and sentences were shown only in *Hiragana* phonetic characters, and the textbook presents neither *Katakana* phonetic characters nor Kanji characters. Shaharuddin et al. (2016), Choong et al. (2016), and Ahmad et al. (2016) are a series of textbooks that are used by students learning Japanese as an elective course at another major Malaysian university. All these volumes are written in Romanized Japanese and do not teach pronunciations of Kanji characters because the content has to be taught within the limited duration of the elective courses. However, pronunciation and order of strokes of *Hiragana* phonetic characters are taught in Shaharuddin et al. (2016), a textbook for early beginners at Level 1. Pronunciation and order of strokes for *Katakana* characters are instructed in Choong et al. (2016), a textbook for beginners who have completed a Level 1 course. Ahmad et al. (2016), a textbook for students who have completed a Level 2 class,

demonstrates 20 Kanji words, such as 入口 (“entrance”), 駅 (“station”), 男 (“man”), 女 (“woman”), and お手洗い (“lavatory”). Nevertheless, the purpose of the demonstration is to teach neither pronunciation nor meaning of each character, but to exemplify Kanji words that would be useful for foreign visitors to Japan.

In general, Japanese-language teaching in Malaysia and the teaching of Japanese Kanji in Malaysian secondary schools has considerable restrictions. In particular, only one specific pronunciation is shown for each Kanji to minimize confusion. For instance, a second-year Japanese textbook by Ismail and Ito (2011, p. 98) only demonstrates the Kanji 言 as part of the word 言う (*iu*) meaning “to say.” The Japanese word 言語 (*gengo*) (“language”), usually spelled with two Kanji, is shown as げん語, spelled with two *Kana* phonetic characters followed by a Kanji.

A third-year Japanese textbook by Lee et al. (2012) avoids showing the Kanji 毎 (*mai*) (“every”) as part of the word 毎日 (*mainichi*) (“every day”). Instead, the textbook shows a sample sentence “わたしは まい日 十一時ごろ ねる。” (“I go to bed at around 11 every day.”) (p. 13). Although 毎 is avoided in that part of the textbook, a following unit of the very same textbook introduces the character and the word 毎日 (“every day”) but this time in Kanji characters (p. 203). To maintain coherence, the word could have been spelled in Kanji characters throughout the whole textbook, and small phonetic spellings (*furigana*) could have been added above the Kanji 毎 in parts where the character was yet to be taught. A fourth-year textbook by Lee et al. (2013, p. 149), presents the Kanji 文 with Malay translations and sample words that include that character. The word 文化 (*bunka*) (“culture”), generally written with two Kanji characters is shown as 文か because the Kanji 化 is not taught in the current series of Malaysian secondary-school textbooks. Meanwhile, the fifth-year textbook from the same series also demonstrates 文化 (*bunka*) (“culture”) as 文か as

part of the Japanese 日本文か (*nihon bunka*) (“Japanese culture”) (Mohd et al., 2014, p. 198). This restriction in the demonstration of Kanji can be an oversimplification that decreases a student’s opportunity to learn basic Kanji. In another instance, the word 小説 (*shōsetsu*) (“novel”) is presented in only in phonetic characters such as しょうせつ, and the character 小 (*shō*) was also not used even though it comprises only three strokes (p. 21). However, on page 23 of the same textbook, the character 小 is demonstrated as a part of the word 小さい (*chiisai*) (“small”) because the pronunciation had already been taught in the second year of secondary school. A fifth-year textbook by Mohd et al. (2014) avoids the Kanji 予 in the word 予習 (*yoshū*) (“preview”); instead, the book shows it as よ習 in the sentence “じゅぎょうの前に、よ習をしてください。” (“Please preview the content of study before attending a class.”) (p. 14). The Kanji 予 includes only four strokes but has still not been included in the characters taught at Malaysian secondary schools.

The textbook does not demonstrate the Kanji 元 in 元気 (*genki*) (“be in good health”); instead, it provides the spelling げん気 and the sentence “さいきん 友だちが げん気が ありません。” (“These days, a friend is not in good health.”) (p. 86). A first-year textbook by Chin et al. (2010) that is used by students who are also using the fifth-year textbook Mohd et al. (2014), introduces the word 元気 (*genki*) spelled with *Hiragana* phonetic characters in the expression “おげんきですか。” (“How are you?”) (p. 73), but the current series of textbooks for Malaysian secondary school students never introduces the Kanji 元 throughout the five years of secondary education in the country. The Kanji 去 (*kyo*) is never taught in secondary-school Japanese classes in Malaysia.

Mohd et al. (2014), a fifth-year textbook, uses the spelling きょ年 (*kyonen*)

(“last year”) in the sentence “きょ年 [...]を そつぎょうしました。” (“I graduated from [...] last year.”). Lee et al. (2013) written for fourth-year secondary school students also demonstrates the same spelling of the word きょ年の大きいじしん (*kyonen-no ōkii jishin*) (“heavy earthquake that occurred last year”) (p. 148). In contrast, the Kanji 来 (*rai*) (“to come”) that is included in 来年 (*rainen*) (“next year”) is taught during the second year of secondary education if a school uses Ismail and Ito (2011) from the same series of textbooks.

The character 社 (*sha*) spelled phonetically as part of the Japanese word 会しゃ (*kaisha*) (“company”) in the fourth-year Malaysian textbook (Lee et al., 2013, p. 122). However, 社 is explicitly demonstrated on page 186 of the same volume, and the word *kaisha* is spelled with two Kanji (会社) on page 228. Since the number of strokes of 社 is only seven, *kaisha* could have been shown as 会社 from the very beginning of the textbook, especially noticing that the phonetic characters were shown alongside the Chinese characters. Similarly, the Kanji 屋 (*oku* in *on-yomi* reading and *ya* in *kun-yomi* reading) is never taught in Japanese-language classes throughout the entire five years of Malaysian secondary education. Therefore, the Japanese *hon’ya* (“bookshop”) whose official spelling is 本屋 is simply shown as 本や in the fourth-year textbook. The phonetic character や (*ya*) is used as a replacement of the Kanji 屋. A sample sentence from the textbook is “すみませんが、本やはどちらですか。” (“Excuse me, where is a bookshop?”) (Lee et al., 2013, p. 187). Another Japanese word *ya* spelled with the phonetic character や means “and.” The end result is confusion in an attempt to simplify the character 屋, as it would have been a difficult character for Malaysian secondary school students.

An additional example is the use of the character 活 (*katsu*), which is never shown in any of the five textbooks used in Malaysian secondary schools. The fifth-year

Malaysian textbook demonstrates the word 生かつ (*seikatsu*) (“life”) in the sentence “学校の生かつでいちばんたのしかったことは何ですか。” (“What was the most interesting experience of your school life?”) (Mohd et al., 2014, p. 40). The character 活 consists of nine strokes, which are fewer than the stroke number of characters taught in the same volume such as 習 (11 strokes), 教 (11 strokes), and 朝 (12 strokes). Therefore, this character could be presented in textbooks along with *Hiragana* phonetic characters.

The majority of Kanji vocabulary consists of two-character compounds. It would certainly be beneficial for students to be able to recognize the combinations of two or more Kanji characters as used by native speakers, especially if both Kanji characters of a word do not contain many strokes. As a result, the current policy for demonstrating Kanji characters in Japanese-language textbooks for Malaysian secondary school students, which aim to reduce learner confusion, paradoxically, hinder Malaysian students from learning Kanji characters.

Furthermore, the majority of Malaysian secondary school textbooks do not explicitly introduce radicals and other components of Kanji characters. The fourth-year textbook by Lee et al. (2013, pp. 65, 66) shows the Kanji 妹 (“younger sister”) and 姉 (“elder sister”), which share the radical 女 (“woman”). However, these words are demonstrated to assist students in learning a pair or group of words in the same word category, but the meaning of the component (“woman”) common to the two Japanese words is not explicitly explained. Such disadvantages in the present series of Malaysian textbooks could be improved by an explicit presentation of pairs of Kanji that share a common component.

In addition, types of Kanji presented in the beginner’s level are partly different between Malaysia and Japan. A Malaysian Japanese-language textbook for the first year of the secondary school by Chin et al. (2010) introduces the Kanji 好 as part of the

word 好き (“to like”). In Japan, this Kanji is officially taught in the fourth year of the elementary school (six years). Table 1 summarizes examples of the replacement of Kanji characters in the abovementioned Malaysian textbooks.

Table 1: Examples of Kanji Replacement in Malaysian Textbooks

Textbooks	Examples of Replacement
Chin et al. (2010) (for the first year of the secondary school)	大がくせい (“university student”) instead of 大学生 (p. 61)
Ismail and Ito (2011) (for the second year of the secondary school)	千えん (“1,000 yen”) instead of 千円 (p. 30) 右て (“right hand”) instead of 右手 (p. 61) 左あし (“left leg”) instead of 左足 (p. 61) げん語 (“language”) instead of 言語 (p. 98)
Lee et al. (2012) (for the third year of the secondary school)	中がく生 (“junior high school student”) instead of 中学生 (p. 7) まい日 (“every day”) instead of 毎日 (p. 16) 高こう (“high school”) instead of 高校 (p. 32) でん話 (“telephone”) instead of 電話 (p. 177)
Lee et al. (2013) (for the fourth year of the secondary school)	しょうせつ (“novel”) instead of 小説 (p. 21) 会しゃ (“company”) instead of 会社 (p. 122) 文か (“culture”) instead of 文化 (p. 149) 本や (“bookshop”) instead of 本屋 (p. 187)
Mohd et al. (2014) (for the fifth year of the secondary school)	よ習 (“preview”) instead of 予習 (p. 14) きょ年 (“last year”) instead of 去年 (p. 43) げん気 (“be in good health”) instead of 元気 (p. 81) 生かつ (“life”) instead of 生活 (p. 40)
Mohd-Hassan (2011) (for university students)	おげんきですか (“How are you?”) instead of お元気ですか (p. 19) (All Kanji characters are replaced with *Hiragana* phonetic characters.)

This difference is related to word frequency and Malaysian learners' needs at the level of communication. According to Tono et al. (2013) which present 5,000 most frequently used Japanese words, the word 好き ("to like") is in the 196th. Such a discrepancy is observed in other basic words and Kanji, and it may be caused by difference in the learning environment for Japanese between Malaysia and Japan. In Japan, most elementary school pupils have opportunities to recognize and learn frequently used Kanji such as 好 ("to like") and 私 ("I") outside class before the school year in which the characters is taught. Conversely, Malaysian learners of Japanese have far more limited opportunities to see and learn these characters.

Chin et al. (2010), Ismail and Ito (2011), and Lee et al. (2012), three Malaysian Japanese-language beginners' textbooks for the first three years of the secondary school present 35, 21, and 31 basic Kanji, respectively. Among them, only one Kanji (語 "language, word") in Ismail and Ito (2011) and five (黒 "black," 買 "to buy," 聞 "to hear," 間 "between", and 話 "talk") in Lee et al. (2012) consist of 11 strokes or more, implying that words with many strokes is one of the main difficulties in learning Japanese for native Malay speakers. Along with four characters comprising more than 10 strokes (朝 "morning," 雪 "snow," 教 "to teach," and 習 "to learn"), the Kanji 私 of the Japanese word *watashi* ("I") is taught in the Malaysian textbook for the fifth year of secondary schools (Mohd et al., 2014).

Banno et al. (2011), the first volume of a series of textbooks *Genki* for beginners of Japanese as a foreign language worldwide, presents the Kanji 私 from its lesson 3 (p. 90). In the two first lessons, this word is spelled in phonetic characters. Widely used in many countries, this series of textbooks is also used in Malaysia, e.g., at the Faculty of Languages and Linguistics of the University of Malaya.

The number of strokes may be also an important factor. For example, the Kanji 好 includes five strokes and two Kanji 女 (“woman”) and 子 (“child”). In Chin et al. (2010), these two Kanji are taught together with the 好. The form of the Kanji 好 is visually simpler as compared with a Kanji with 10 or more strokes such as 孫 (“grandchild”) that also includes the same part of character originating from the Kanji 子 (“child”).

Three A Corporation (2013a) and (2013b) are Malaysian and Singaporean editions of a series of Japanese-language textbooks—*Minna-no Nihongo*—originally published in Japan. These textbooks cover the first half of the beginner level of this series. However, Three A Corporation (2013a), for the earliest stage of beginner level presents basic Kanji characters including 好 (“to like”), 甘 (“sweet”), 辛 (“spicy”), 彼 (“he”), and 涼 (“cool”). Three A Corporation (2013b), as a second step in the learning process, also presents 払 (“to pay”), 押 (“to push”), 祈 (“to pray”), and 眠 (“to sleep”). As mentioned before, 好 is taught in the fourth year of Japanese elementary school, and the other eight characters are taught in Japanese junior high school. 涼 comprises 11 strokes, and the other eight characters include 10 or fewer strokes. The majority of characters includes around 10 strokes and would not be difficult for beginners, and prescribed school years in Japanese elementary or junior high schools do not affect the order of Kanji presentation in many textbooks published in Malaysia.

1.3 Principal features of Malay vocabulary

In Malay and Indonesian, various types of affixes, such as prefixes and suffixes, enable a flexible derivation. In addition to the system of derivation, Malay and Indonesian have many loanwords of Sanskrit and Arabic origins. Before the spread of Islam from the

14th century, regions in present-day Malaysia and Indonesia were largely influenced by Indian culture. Therefore, the Malay language at that period borrowed many words from Sanskrit. Furthermore, seventh-century inscriptions in Old Malay borrowed many Sanskrit words owing to the growth in trade with India (Watson-Andaya and Andaya, 1982, p. 14). At the end of the 13th century, however, the leaders of the Pasai kingdom in Sumatra converted to Islam and prospered from trade with Muslim Indians (p. 53). In the early 15th century, the ruler of Malacca also accepted this faith (id.). The arrival of Islam in what is now Indonesia and Malaysia brought a subsequent influx of Arabic loanwords to the Malay language. Therefore, Malay-speaking learners who wish to make use of their first-language knowledge cannot rely on morphological similarities between Malay and Japanese words. However, such learners and Japanese-language teachers in Malaysia could focus on other types of similarities such as those of a semantic nature discussed in Section 1.5.

1.4 Characteristics of word derivations in Malay

A significant characteristic common to the Malay language is the wide range of derivations made possible by affixes proper to the language. A Malay root can be a noun, an adjective, or the stem of a verb. The Malay root *perempuan* ("woman") forms compounds such as *anak perempuan* ("daughter") and *adik perempuan* ("younger sister"). *Anak* means *child*, and *adik* means "younger sibling." The words *anak* and *adik* are usually specified by a word specifying their sex such as *perempuan* ("woman"). The Malay adjective *sakit* ("ill, sick, painful"), another root, has a derivative *kesakitan* ("pain") (Harper-Collins, 2005, p. 646). The word is derived by the circumfix *ke- -an*, i.e., a combination of the prefix *ke-* and suffix *-an*. Roots such as *lihat* (root meaning "see") are verb stems and can be used as an imperative (Liaw, 2012, p. 259). However, this root is usually followed by the verbal prefix *me-* in formal written Malay (p. 111).

In addition, *lihat* can also be the stem of a noun such as *penglihatan* (“eyesight, vision”). Here, the combination of the prefix *peng-* and suffix *-an* nominalizes a root. Forms of Malay roots are regularly maintained in derivatives. The form consistency of Malay roots and their derivatives has advantanges when their Japanese equivalents also share a common semantic component.

Table 2 demonstrates Malay affixes that are included in Malay words used in the vocabulary tests of this study. Roots in the derivatives listed in the table are indicated in bold letters.

Table 2: Malay Affixes Included in Malay Words Used in the Tests of the Study

Affixes	Roots	Derivatives
1. *-an*	laut (“sea”)	**laut**an (“ocean”)
	tempat (“place, location”)	**tempat**an (“local”)
	bangun (root meaning “build”)	**bangun**an (“building”)
	jerit (root meaning “shout” and “scream”)	**jerit**an (“shout, scream”)
2. *ber-*	lalu (root meaning “pass”)	ber**lalu** (“to pass”)
	cahaya (“light”; root meaning “shine”)	ber**cahaya** (“to shine”)
	guna (root meaning “use”)	ber**guna** (“useful”)
3. *ke- -an* (nominalize a root)	bakar (root meaning “burn”)	ke**bakar**an (“destructive fire”)
4. *me-*, *men-*, *mem-* (verbalize a root)	lihat (root meaning “see”)	me**lihat** (“to see”)
	dengar (root meaning “hear” and “listen”)	men**dengar** (“to hear, listen”)
	bakar (root meaning “burn”)	mem**bakar** (“to burn”)

5. *me- -i* (build an intransitive verb)	lalu (root meaning “pass”)	me**lalu**i (“to pass through”)
6. *me- -kan* (build a transitive verb)	lahir (root meaning “bear”)	me**lahir**kan (“to give birth)
7. *di- -kan* (passive of the verb with the affixes *me- -kan*)	lahir (root meaning “bear”)	di**lahir**kan (“to be born”)
8. *pen-* (nominalize a root)	sakit (root meaning “ill, sick”)	peny**akit** (“illness, sickness”) (When the affix *pen-* precedes an “s,” the *s* sound is assimilated with the *ny* sound.)
9. *pen(g)- -an* (nominalize a root)	dengar (root meaning “hear” and “listen”)	pen**dengar**an (“hearing”)
	lihat (root meaning “see”)	peng**lihat**an (“eyesight, vision”)
10. *per- -an*	ikan (“fish”)	per**ikan**an (“fishery”)
	kata (root meaning “say”)	per**kata**an (“word”)
11. *ter-*	ikat (root meaning “tie”)	ter**ikat** (“to be tied, bound”)

The Malay affix *-an* (cf. “1.” in Table 2) has two functions: constructing a noun or an adjective derived from a root (e.g., *laut* “sea” and *lautan* “ocean”) and building a noun derived from a root that functions as a stem of a verb (“verb-based root”) (e.g., *bangun* “build” and *bangunan* “building”). The prefix *ber-* (cf. “2.”) can be connected to nouns,

verbs, and adjectives. The root *cahaya* (“light”) is included in the Malay verb *bercahaya* (“to shine”). The combination of affixes *ke-* and *-an* (cf. “3.”) nominalizes a verb-based root. For example, *bakar* (root meaning “burn”) has a derivative *kebakaran* (“destructive fire”).

The affixes *me-*, *men-*, and *mem-* (cf. “4.”) verbalize a root, and several variants exist as they change according to the pronunciation of the first syllable of the root. The root *dengar* meaning “hear” and “listen” has a derivative *mendengar* (“to hear, listen”). The combination of affixes *me-* and *-i* (cf. “5.”) builds an intransitive verb. The root *lalu* meaning “pass” is included in the verb *melalui* (“to pass through”). The combination *me-* and *-kan* (cf. “6.”) builds a transitive verb. The combination of affixes *di-* and *-kan* (cf. “7.”) constructs a passive form of a verb that includes the affixes *me-* and *-kan*: *melahirkan* (“to give birth”) and *dilahirkan* (“to be born”).

The affix *pen-* (cf. “8.”) nominalizes a root. In the vocabulary test of this study, the Malay *sakit* (“ill, sick”) and its noun form *penyakit* (“illness, sickness”) are provided. When this affix precedes an “s,” it becomes *peny-* and the *s* sound is assimilated with the *ny* sound. The combination of affixes *pen(g)-* and *-an* (cf. “9.”) also nominalizes a root. For instance, the Malay *dengar* (root meaning “hear” and “listen”) has a derivative *pendengaran* (“hearing” as a physical sense). Similarly, the combination of affixes *per-* and *-an* (cf. “10.”) nominalizes a root, such as *kata* (root meaning “say”) and its derivative *perkataan* (“word”). In addition, a noun, such as *ikan* (“fish”), constructs another related noun *perikanan* (“fishery”) by adding the affixes *per-* and *-an*. The affix *ter-* (cf. “11.”) forms a passive with emphasis of state. For instance, a combination of this affix and the root *ikat* (root meaning “tie”) builds the word *terikat* (“to be tied; bound”). The affix *di-* is the most frequently used affix to passivize verbs: *buat* (root meaning “make”) and *dibuat* (“to be made”).

Some Malay roots and their derivatives have a relationship similar to several

Kanji characters sharing a semantic component. This study does not focus on morphological distinction between Malay words derived by affixes and compounds consisting of two roots but aims to utilize the semantic similarities between Japanese Kanji characters that include the same semantic component and their Malay equivalents that share a common root.

1.5 Three similarity types proposed in this study

The three Kanji types proposed in this study were elaborated according to the degrees of similarity between the Japanese Kanji characters and their Malay equivalent words. This is a major difference from previous Kanji categorizations that were normally not related to learners' first languages. This study will propose a series of lists concerning pairs of Malay vocabulary and their Japanese equivalents sharing a Kanji component.

Previous studies on Kanji components, such as Flores d'Arcais (1992), Flores d'Arcais and Saito (1993), Flores d'Arcais, Saito, and Kawakami (1995), Mori (1998), Chikamatsu (2005, 2006), and Toyoda (2007), reveal that when semantic components in Chinese characters are included in words, they can aid Japanese- or Chinese-language learners to identify and comprehend the meaning of those words. This study targeted beginner Japanese-language learners who are native Malay speakers and thus have no previous knowledge of Kanji characters. It hypothesizes that such learners will be able to utilize semantic components of selected characters in their Kanji learning when the components are demonstrated through written instructions showing semantic similarities between the selected Japanese Kanji words and their Malay equivalents. Tamaoka et al. (2002) state that the 1,945 *Jōyō Kanji* include 214 different radicals and that over half of the characters share one of the 24 radicals with the highest frequency. Mori (2014, p. 407) emphasizes that 60% of the *Jōyō Kanji* consist of a combination of semantic and phonetic components. Rather than suggesting numerous Kanji characters

that share semantic similarities with corresponding Malay words, this study primarily focuses on Kanji character learning by Malay speakers who are uninitiated to the Japanese language by explicitly presenting approximately 30–50 Japanese words that include basic Kanji characters and their Malay equivalents in each vocabulary test.

Koda (2005a, p. 59) demonstrates the principal reasons that support the efficacy of explicit learning of vocabulary without contexts. Firstly, Koda notes that L2 learners, already possessing the ability to use L1 vocabulary equivalents to L2, can develop their L2 comprehension skills rapidly. Secondly, she indicates that learners' comprehension abilities through incidental vocabulary learning affect success levels of the learning heavily. In other words, decontextualized vocabulary learning appears to assist L2 vocabulary acquisition more independently than implicit learning.

In addition, Schmitt (1997) highlights the benefits of grouping vocabulary items as it often enhances recall of the target language vocabulary (p. 213). This study aims to demonstrate Japanese words and their Malay equivalents that share semantic similarities. The associated Japanese and Malay words demonstrated in this study primarily consist of two vocabulary items and their equivalents.

The Malay word *mata* ("eye") has numerous derivatives and compounds. The combination of *mata* ("eye") and *air* ("water") constructs *mata air* ("water spring"). The corresponding Japanese word *suigen* 水源 includes 水 ("water") and 源 ("source"). In such cases, Malay words and their Japanese equivalents have a different scope of meaning and little semantic similarity is observed between the words. However, others share a similar combination of words in both Malay and Japanese. The Malay *mata pelajaran* ("subject of study") includes *mata* ("eye") and *pelajaran* ("learning; study"). In Japanese, the second character of its equivalent *kamoku* 科目 is the Kanji 目 ("eye"). Furthermore, the Malay *cermin mata* ("glasses"), a compound of *cermin* ("mirror") and *mata* ("eye"), has an equivalent Japanese word that consists of two Kanji

characters: 眼 (another character meaning “eye”) and 鏡 (“mirror”).

Similarities between Japanese and Malay, exemplified in the previous paragraph, are related to a single Malay root (e.g., *mata*) commonly included in Malay words and several Kanji characters (e.g., 目 and 眼) in their Japanese equivalents. Such similarities can be observed in many cases. However, the definition of “semantic similarities” utilized in this study is a more limited one. It focuses on semantic similarities between two Kanji characters sharing one component (mostly a semantic component) and their Malay equivalents that commonly include a root.

The Kanji characters used for the vocabulary tests in this study are categorized into three types according to the types of semantic similarities between the Kanji characters and their corresponding Malay words. The categorization was used to analyze the results, but it was not indicated in the sheets distributed to the test participants.

The relation between two Kanji characters sharing a semantic component and the existence of semantic similarities between selected Japanese Kanji characters and their Malay equivalents are the principal criteria for “Type 1 Similarity.” Characters categorized as Type 1 constitute a pair in which the whole part of a character with fewer strokes is included in another character in the pair. The simpler Kanji characters in the following pairs are 見 (“to see”), 言 (“to say, word”), and 光 (“light, shine”). Similarly, Malay words equivalent to the listed Japanese words share the same root, such as *lihat* (root meaning “to see”), *kata* (root meaning “to say” and “word”), and *cahaya* (“light, shine”).

Table 3: Examples of Kanji Characters and their Malay Equivalents Associated with Type 1 Similarity

1. 見る and 視力	2. 言う and 語	3. 光 and 輝く
見 (as part of 見る, meaning “to see”) (Malay: *melihat*)	言 (as part of 言う, meaning “to say”) (Malay: *berkata*)	光 (“light, shine”) (Malay: *cahaya*)
視 (as part of 視力, meaning “eyesight”) (Malay: *penglihatan*)	語 (“word”) (Malay: *perkataan*)	輝 (as part of 輝く, meaning “to shine”) (Malay: *bercahaya*)

Figure 1 is a map for the meanings of the Malay words *lihat* (root meaning “see”), *penglihatan* (“eyesight, vision”), *melihat* (“to see”), their corresponding Japanese words, and the Kanji 見. The Kanji 視 includes 見. This figure demonstrates an approximate overlap between the meanings of the Malay and Japanese words. Both the Malay root *lihat* and the Kanji 見 mean “see.”

Type 1

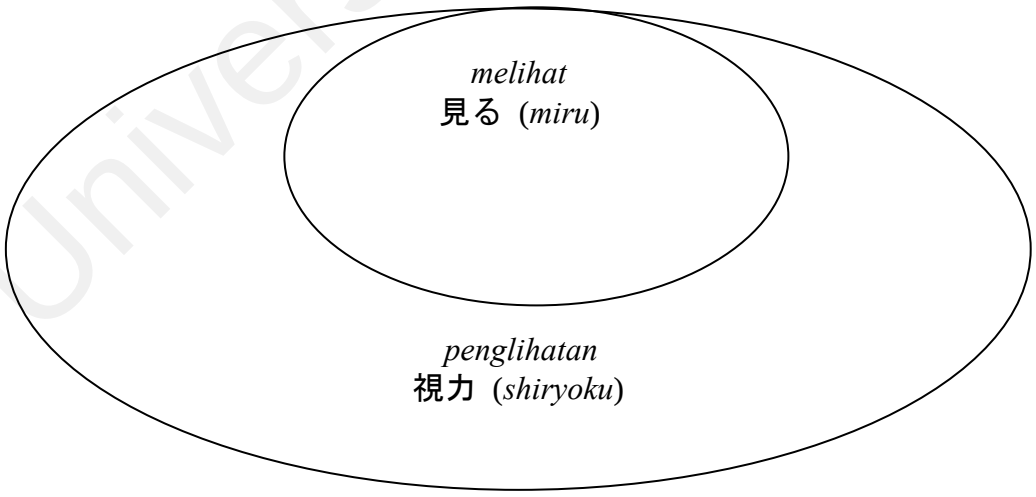

Figure 1: Type 1 Similarity among *Melihat* (“to see”), *Penglihatan* (“eyesight, vision”), and their Japanese Equivalents

Vocabulary items shown in Table 4 and the additional instructions are an excerpt from the English translation of written instructions for the experimental group in vocabulary tests of this study. It demonstrates the Malay words *melihat* (“to see”), *penglihatan* (“eyesight, vision”), and their Japanese equivalents.

Table 4: *Melihat* (“to see”) and *Penglihatan* (“eyesight, vision”) with their Japanese Equivalents

Root: *lihat* (verb-based root meaning “see”)

me**lihat** (v.)	**見る** miru
peng**lihat**an (n.)	**視力** shiryoku

The Malay word *lihat* is a root meaning “see,” and *melihat* means “to see.” Similarly, the Japanese word **見る** means “to see” and is included in another character **視**, which has an almost identical meaning. The latter is used as part of words such as *shiryoku* **視力** (“eyesight, vision”). This combination of Kanji literally means “power to see” as **力** signifies “power.”

Type 2

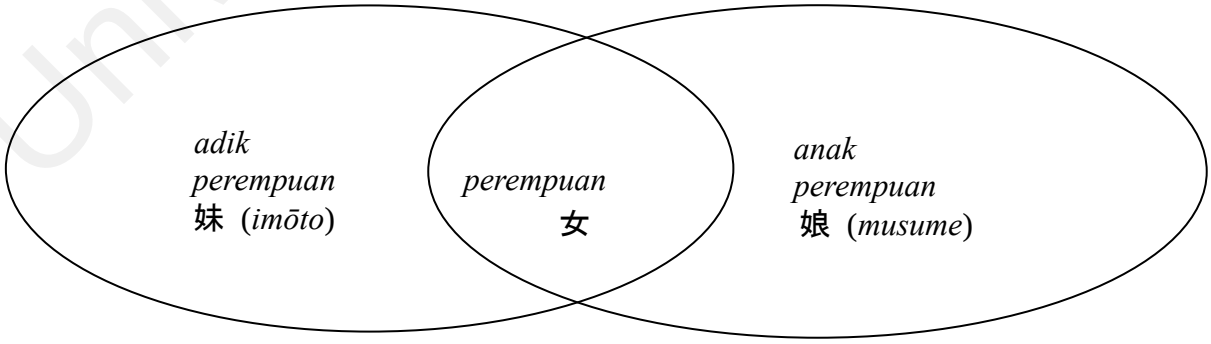

Figure 2: Type 2 Similarity among *Perempuan* (root meaning “woman, female”), *Adik Perempuan* (“younger sister”), *Anak Perempuan* (“daughter”), their Japanese Equivalents, and the Kanji **女** (“woman”)

The two Kanji 娘 (“daughter”) and 妹 (“younger sister”) are categorized as “Type 2a.” These characters share the radical originating from the Kanji 女 (“woman”). Their Malay equivalents are *anak perempuan* (“daughter”) and *adik perempuan* (“younger sister”), which also share the word *perempuan* (“woman”). Both 娘 and 妹 are single characters or words. The degree of correspondence with their Malay equivalents is clearer than that for “Type 2b,” as explained below. The high degree of semantic correspondence between Japanese and Malay vocabularies is characteristic of Type 2 similarity. The other pair of Type 2 characters was 眼 (“eye” that forms a part of compound words related to “eye”) and 瞳 (“pupil of the eye”). The common component shared by these two characters is 目 (“eye”). The Malay equivalents of the Japanese 眼鏡 (“glasses”) and 瞳 (“pupil of the eye”) are *cermin mata* (“glasses”) and *anak mata* (“pupil of the eye”). Since the Kanji 眼 in the Japanese 眼鏡 (“glasses”) and its Malay equivalent *cermin mata* (“glasses”) have a structure of compound words, the pair of the characters 眼 and 瞳 were categorized as “Type 2b.”

Type 3

Type 3 Similarity is based on similarities between a Malay word and a Japanese Kanji component that do not have close meanings but maintain some semantic association between the two languages that can assist learners in making a connection. One Kanji component indicates parts of the body (e.g., “ear”) or basic words (e.g., “water”), whereas one Malay root in their Malay equivalents indicates an action performed by the body part (e.g., “to hear”) or basic words associated with the meaning of the Japanese equivalent words (e.g., “sea”). The principal criterion of Type 3 similarity is the existence of the same component of Kanji shared by two Kanji; however, the shared component is not the entire part of any character. This is the major difference between

Type 1 and Type 3 similarities. Their Malay equivalents share semantic similarities with the Japanese equivalents but are not directly related to the common components of the two Kanji.

For example, the two Kanji 聞 (“to hear, listen”) and 聴 (“to listen”) include a common radical which is an independent Kanji 耳 (“ear”). The Malay words *mendengar* (“to hear”) and *pendengaran* (“hearing”) are semantically related to the concept of *ear* although *dengar* (root meaning “hear”) does not include the meaning of *ear*. This is the primary difference between Type 2 and 3 similarities. Among Type 3 characters, a common component in the following characters can be used as an independent Kanji: 聞 and 聴 (radical: 耳 “ear”), 叫 and 鳴 (radical: 口 “month”), 場 and 地 (radical: 土 “ground, soil”), and 結 and 縛 (radical: 糸 “thread”). However, the radicals 氵, 疒, and 辶 shared in the following characters do not form an independent character: 海 and 洋, 病 and 痛, and 通 and 過.

海 (“sea”) and 洋 (“ocean”) shown as another pair of Type 3 characters share the radical 氵 (*sanzui*) that originates from the Kanji 水 (“water”). The corresponding Malay words *laut* (“sea”) and *lautan* (“ocean”) do not contain any word related to water; however, Malay-speaking learners who are shown the two Kanji and their Malay equivalents may easily notice that the meanings of “sea” and “ocean” are closely connected to “water.” The similarities between Japanese and Malay in the Type 3 category consist mainly of a shared Kanji component in a Kanji pair, and their Malay equivalents also share a root.

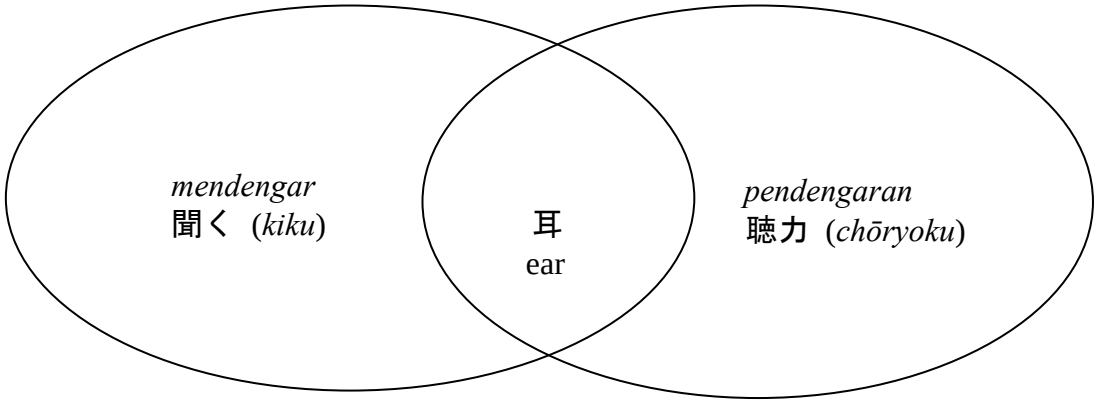

Figure 3: Type 3 Similarity among *Mendengar* (“to hear”), *Pendengaran* (“hearing”), their Japanese Equivalents, and the Kanji 耳 (“ear”)

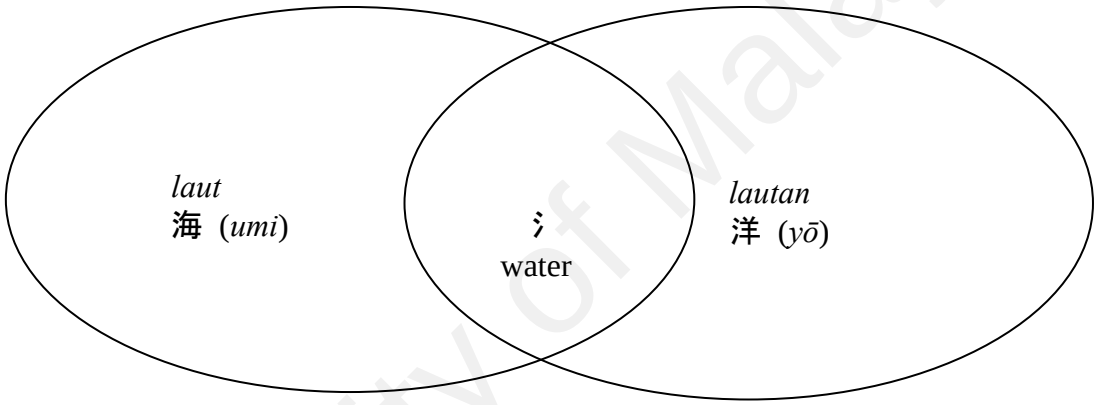

Figure 4: Type 3 Similarity among *Laut* (“sea”), *Lautan* (“ocean”), their Japanese Equivalents, and the Radical 氵 (“water”)

The pilot test and Test 1 primarily focused on similarities in the category Type 1. Kanji characters in the categories Types 2 and 3 were presented in Test 2 and Test 3 of the study.

This study does not include any test for determining production skills such as writing Kanji characters because inclusion of such a test would have distracted the participants from the task of recognizing the selected Kanji. The originality of the categorization is its relation to both the listed Japanese Kanji sharing the same component and their Malay equivalents sharing the same root.

The derivation systems of Malay and Japanese differ significantly. The Malay

derivation system is far more regular than the Japanese one. In addition, Japanese and Malay have conflicting rules for the order of a noun and its qualifying adjective. In Malay, qualifying adjectives follow nouns. To minimize test participants' confusion, the present study's written and oral instructions do not emphasize such detailed differences between both languages' affixes, structures, and other features.

However, as described above, there are many examples of semantic similarities between Japanese and Malay. The vocabulary test of the present study will include such examples that possibly help native Malay speakers learn Japanese Kanji characters.

1.6 Hypothetical threshold of difficulty for native Japanese elementary school pupils

In 1946, after World War II, Chinese characters used in textbooks and principal written media in Japanese were partly simplified in favor of the facilitation of Kanji learning by elementary school pupils and junior high school students. Among these simplified characters whose original forms included 11 or more strokes, the number of strokes of 103 characters was decreased to 10 or fewer strokes after the 1946 reform. Twenty-six of the simplified Kanji characters comprise 10 strokes. Among the 10-stroke characters, 15 Kanji (敏, 陥, 涙, 既, 悩, 恵, 華, 捜, 粋, 称, 剣, 竜, 剤, 浜, and 恋) were not taught at elementary school level but at junior high school level. 14 characters which were simplified still comprise 11 strokes after the Kanji reform, and four Kanji (喝, 惨, 酔, and 蛍) of them are taught at junior high school level after the reform. This proves that 10 strokes can be an important threshold between Kanji for Japanese elementary school pupils and junior high school students, with most Kanji taught at junior high school level in Japan comprising 10 strokes or more.

The hypothetical threshold described above may be equally applicable to Japanese-language learners who have not studied Chinese characters.

1.7 Research objectives and questions

The present study proposes and examines an efficient method of presenting Kanji characters that share a semantic component and their Malay equivalents sharing a root for facilitating the learning of Kanji characters by native Malay-speaking university students in Malaysia. In particular, the method capitalizes on a broader utilization of the learners' first language and of similarities between Japanese Kanji characters and their Malay equivalents. As an introduction to learning Kanji characters for Malay-speaking beginners, the presentation method described in this study will encourage Malay-speaking students to learn a broader range of similar Kanji characters.

This study presents the following three research questions:

1. Does the use of Malay to demonstrate Japanese Kanji and their Malay equivalents facilitate the recognition of semantic Kanji components and the learning of Kanji characters?

2. Does explicitly presenting semantic similarities between Japanese Kanji characters and their Malay equivalents assist Malay-speaking students in learning Kanji characters with approximately 10–19 strokes sharing a semantic component?

3. Do the three Kanji types proposed in this study help Malay-speaking students learn basic Kanji characters?

1.8 Significance of the study

The significance of the study will be as follows:

1. Usefulness of Malay, the learners' first language, to demonstrate Malay equivalents of the selected Japanese Kanji characters and provide written instructions in Malay

This study suggests that the presentation of selected Japanese Kanji characters and their Malay equivalent words to demonstrate semantic similarities, along with written instructions in the learners' first language, Malay, enables Malay-speaking learners to learn Japanese Kanji efficiently. In the process of gaining a better understanding of the connection between Malay and Japanese, learners' comprehension of selected Kanji characters may be enhanced. This process may also encourage them to spontaneously find other ways to utilize their knowledge of first language while learning the target language.

2. Effectiveness of explicitly presenting pairs of Kanji characters that share a common component to assist Malay speakers' learning of Kanji characters

This study will explore the effectiveness of explicitly demonstrating Japanese Kanji characters and their Malay equivalents, which primarily share semantic similarities. The Kanji characters used in the tests of the study mostly share the same component. The presentation method proposed in this study will enable Malay-speaking university students to recognize the meanings of the listed characters and their major components. Additionally, this demonstration method and the L1 written instructions for the experimental group participants regarding semantic similarities between the listed Japanese and Malay words will be proposed as an integrated methodology to accelerate the use of the participants' knowledge of the L1 vocabulary.

3. Benefits of the three Kanji character types proposed in this study

This study proposes three types of Kanji characters (Types 1, 2, and 3) (cf. Section 1.5). The majority of Type 1 characters contain fewer than 10 strokes (e.g., 火 "fire" and 雨 "rain"). The instruction sheets distributed to the experimental group also included more complex Type 1 characters (e.g., 焼 as part of the word 焼く "to burn" and 雲 "cloud"), which share a common component with simpler characters within the pair. The combination of simple and complex characters was intended to alleviate any difficulty felt by experimental group participants and to help them focus on the listed Kanji characters. Examples of Type 2 characters are 妹 ("younger sister") and 娘 ("daughter"), which share the common radical 女 ("woman"). In addition to this common Kanji component, the experimental group participants were given written instructions informing them of certain semantic links with their Malay equivalents *adik perempuan* ("younger sister") and *anak perempuan* ("daughter"), which share *perempuan* ("woman"). Additionally, the position of the common Kanji components is fixed to the left side of each listed Type 2 character. Therefore, this regularity will enhance participants' recognition of one of the most usual positions of the major Kanji components. Type 3 characters (e.g., 鉄 "iron" and 鋼 "steel") also share semantic similarities with their Malay equivalents *besi* ("iron") and *besi waja* ("steel"), which share *besi* ("iron"). Shared in 鉄 ("iron") and 鋼 ("steel"), the common component 金 means "metal" in this context. These semantic links would accelerate participants' learning of Type 3 characters. Section 3.1.3 in the chapter on methodology compares the three types of similarities and relevant characters to explain their major characteristics. Chapter 4, which primarily demonstrates test results and analyzes them, examines the benefits of the three-type categorization.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter primarily reviews previous studies on contrastive linguistics, utility of cross-linguistic similarities for foreign language learning, and Kanji characters related to the acquisition of Japanese as a foreign language (JFL). Section 2.2 overviews the development of applied linguistics from a contrastive perspective. Similarities between vocabularies in learners' L1 and L2 have been investigated and analyzed by contrastive linguistics upon which this study is partly based. It explores the effectiveness of comparatively demonstrating semantic similarities between Malay as learners' L1 and Japanese as L2 for facilitation of Japanese-language learning. Section 2.3 demonstrates recent studies on the usefulness of a learner's first language to vocabulary acquisition in a foreign language. Section 2.4 presents principal features of Chinese characters, and Section 2.5 demonstrates previous studies regarding the recognition and reading processes of Kanji characters and the teaching of the characters to JFL learners. Section 2.6 exemplifies visualization utilized for Kanji teaching in Japanese-language textbooks or classrooms, and Section 2.7 analyzes textbooks published in Malaysia and other countries. Section 2.8 explains connections between previous studies and the presentation method proposed in this study.

2.2 The development of applied linguistics from a contrastive perspective

This study is based on a contrastive viewpoint of linguistic similarities although it does not aim to utilize phonetic similarities between vocabularies in linguistically close languages that have been discussed and analyzed in many previous studies. First of all, the author of the present study briefly overviews the development of applied linguistics from contrastive perspectives. Behaviorism, a psychological perspective proposed in the

1910s by J. B. Watson and B. F. Skinner, influenced linguistics until the 1960s. For example, Watson (1919) insisted that psychology would need to be developed as a scientific field that primarily deals with measurable and observable data obtained through objective methods. In addition, behaviorists prioritized repetitive imitations and the reinforcement of links between stimuli (input of a model) and responses (output) for forming new habits, including language learning. Bloomfield (1935) provides an early example of language analysis and language learning from a behavioristic viewpoint: language learners need to learn grammar, forms, meanings, and other varied features by means of repetition of the target language. In the 1950s, linguists influenced by behaviorism started to focus on the acquisition process of L2 learners, primarily the influence of similarities and differences between their L1 and L2. Many researchers suggested that the learners' L1 influenced their L2 acquisition. For example, the late Spanish- and English-speaking American linguist Lado, in his book, *Linguistics across cultures: Applied linguistics for language teachers* (1957), compared Spanish and English on varied aspects to propose effective teaching and learning methods for English as a foreign language. Stockwell, Bowen, and Martin (1965) posited the existence of a "hierarchy of difficulty" after analyzing processes by which English-speaking learners acquired Spanish-speaking skills, which consists of five different degrees according to the discrepancy between learners' L1 and L2. They hypothesized that one-to-one correspondences in word forms and grammatical functions demand the least effort from L2 learners, but that they conversely face the highest level of difficulty in case a word in their L1 corresponds to two or multiple words in their target language (e.g., the English preposition *for* and Spanish prepositions *por* and *para* whose functions overlap that of the English equivalent). Corder (1993, p. 29) emphasizes the significance of learners' L1 as the basis for L2 learning. His hypothesis underlines that, in their acquisition process, most L2 learners borrow their L1

vocabulary, grammatical features, and structures to facilitate their learning. Ellis and Barkhuizen (2005, p. 52) recognize that contrastive analysis has suggested major reasons for L2 learners' errors that might have been influenced by their L1 vocabulary or grammar. Chomsky (1965) refuted contrastive linguistics and posited that all humans would have a common innate competence for the learning of any language. Hüllen (2004) indicates that this introduction of cognitive mentalism to language learning theories has been the primary contribution of Chomskyan linguistics.

The contrastive analyses of cross-linguistic similarities need not only be limited to grammatically accurate word forms. Corder (1974, p. 128) regarded the description of L2 learners' errors to be comparative. Moreover, Corder (1967, p. 166) focused on the importance and benefits of L2 learners' speech and writing errors for language teaching, and posited that the existence of "transitional competence" may have been acquired and thus continued to develop. Learners' errors and their imperfect L2 began to be considered positively as unavoidable but indispensable elements in the process of second language learning. Selinker (1972, p. 214) suggested the term *Interlanguage,* defining it as "the systematic knowledge of a second language which is independent of both the learners' L1 and the target language." However, the term *Interlanguage* has had no unanimous definition yet, and has been interpreted differently. For example, Ellis (1994, p. 30) employs this term as "interim mental grammars built by L2 learners in their process to achieve complete target language competence." The provisional language knowledge of L2 learners' has been measured for various purposes, including error analysis. Previously, similarities and differences between learners' L1 and L2 were regarded as a key element, which affected the learners' errors in their output. One of the major defects of error analysis is that researchers identify and categorize learners' errors according to their own criteria, but often are not sure of what sentence structure learners intended to produce (Ellis & Barkhuizen, 2005, p. 59). A solution to this

problem can be to ask learners themselves, just after their output of incorrect words or grammatical structures. James (1998) indicates the challenge of confirming and determining learners' intentions and the essential reasons for their errors, because they often produce incorrect sentence structures devoid of any specific intention. Another limitation is that this approach fails to appropriately evaluate the influence of the learners' avoidance of specific vocabulary and grammatical structures that are different from those in their L1 or do not exist in it. Contrastive analyses of varied types of L2 learners' output have expanded the scope of study toward a universal process of learning. Dulay and Bart (1973) and Rosansky (1976) focused on L2 learners' acquisition of English grammatical morphemes to determine a common order of acquisition for any type of L2 learners. Pienemann (1984) suggested the existence of a common learning order of German word structure by L2 learners regardless of their L1. To rectify aforementioned defects of a conventional method of error analysis, Eckman (1985) suggested the Markedness Differential Hypothesis (MDH) by introducing the concept of *markedness*, which enables to better justify the errors observed in how L2 learners incorporate varied types of L1. For example, negative verb forms are judged as *marked* words, while their affirmative forms are considered being *unmarked* because of the absence of linguistic signs, e.g., a sign of negation. However, plural nouns, which are normally regarded as *marked* forms, often do not include regular plural suffixes in non-European languages such as Arabic. For example, some plural forms have shorter spellings in the Arabic words such as *kutub* ("books," singular: *kitāb*), *mudun* ("cities," singular: *madīna*), and *jumal* ("sentence," singular: *jumla*) because the short vowels are usually not written in Arabic, except in religious and educational books in which precise pronunciations need to be indicated. The Arabic *kitāb* (كتاب) and *kutub* (كتب) consist of four and three Arabic letters, respectively. In such cases, the distinction between *marked* and *unmarked* words cannot benefit L2 learners. Despite such a limitation, the MDH

partially overcomes the aforementioned problems in error analysis. Eckman (1977), Richards (1984), and Dulay and Burt (1984) suggest more convincing reasons for erroneous inputs into a target language produced by a particular speaker of L1, regardless of the linguistic similarity or difference between the learners' L1 and L2. Although this hypothesis has some advantages, the judgment of *markedness* is often subjective and depends on the researcher's interpretation and viewpoint. After recording English spoken by a 10-year-old Colombian Spanish-speaking child for around 10 months, Cancino et al. (1978) analyzed his use of negative utterances such as *no*, *don't*, and *cannot,* but they could not find any regularity in the forms of output by that participant. In contrast, Schachter (1986), who reexamined the data from Cancino et al. (1978), focused on seven different functions of the negative words, and observed some systematicity at the level of the language use functions. Such regularity in L2 learners' interim language knowledge of the target language, especially in terms of their grammatical use, is supported by Barley and Preston (1996) and many other studies on linguistic variation in L2 learners' production.

Similarities and differences between learners' L1 and L2 seem no longer to be the primary elements that affect the L2 learners' errors, but these features can still be beneficial for the improvement of L2 teaching methods. For example, studies such as Odlin (1989), Odlin and Jarvis (2004), and Ringbom (2007) suggest the utility of learners' L1. Odlin and Jarvis (2004) investigated English narratives written by Finnish and Swedish learners of English. Swedish participants used the English word *for* more precisely, and focused on the Swedish preposition *för* having similar form and functions. In Finnish, the ending *-lle* for the allative case connected to nouns and relevant qualifying adjectives has similar functions, but it has relatively less correspondence compared to the Swedish preposition. In addition, Odlin and Jarvis observed a distinct difference in their use of the English word *what*, which has a Swedish equivalent from

the same etymology (*vad*) but no morphologically similar counterpart in Finnish. Therefore, they suggested that the Swedish equivalents fostered the Swedish learners to produce the English counterparts, while monolingual Finnish learners failed to produce them (Odlin & Jarvis, 2004, p. 136).

According to Lightbown and Spada (2006, p. 99), L2 words that have meanings almost identical to their L1 vocabulary but possessing different forms need to be explicitly presented to L2 learners to some extent. Such L2 items are sometimes phonetically different (e.g., the English word *church* and *Kirche* [kirçə], the German word for "church"), and students often are not conscious of the morphological or semantic similarities between their L1 and L2. Seppänen (1998) analyzed seven principal features of grammatical similarity between English and Finnish from a contrastive perspective, and suggested that Finnish learners of English utilize the similarity for a more rapid and effective learning of their L2. The morphological and semantic similarities in the learners' L1 and L2 vocabulary sometimes accelerate overuse of their L1 vocabulary knowledge and cause incorrect output. Ringbom (2007, p. 72) points out that, in the process of their proficiency development, learners become increasingly conscious of similar L1 and L2 words without one-to-one correspondence. He also emphasizes that morphological and semantic similarities between L1 and L2 can primarily help L2 beginners, who still need to learn most forms and meanings of the basic L2 vocabulary (p. 93). The present study does not use words that are morphologically similar in learners' L1 and L2, but focuses on the efficacy of structural and semantic similarities between learners' L1 being Malay and Japanese as a foreign language. Now, we will start by focusing on previous studies, i.e., reference books, textbooks, and studies on Japanese as a foreign language.

Publications by Matsumoto and Sasaki (2008, 2009a, 2009b) are learning materials on Japanese letters, including Kanji, vocabulary, and grammar for beginning,

intermediate, and advanced learners of Japanese. Matsumoto and Sasaki (2008) provide English and Portuguese translations of entry words and sentences; Portuguese translations are beneficial for Portuguese-speaking learners, particularly for those in Brazil where many Japanese immigrants have lived since the beginning of the 20th century. Matsumoto and Sasaki (2009a) provide English and Mandarin translations of entry words and sentences and also Korean and Portuguese translations of sentences. Matsumoto and Sasaki (2009b) provide English, Korean, and Mandarin translations of entry words and sentences.

Matsumoto and Sakuma (2008) focus on approximately 30 Japanese verbs for learning by beginners who intend to achieve an intermediate level. This textbook presents basic and less frequently used collocational expressions, accompanied by English, Mandarin, and Korean translations. For example, Japanese verb *toru* (to take) can be used in expressions *to take a vacation*, *to get a driver's license*, *to get older*, *to make a copy*, and *to take a room at the hotel* (p. 70). Translations efficiently enable readers to understand the scope of meanings of the presented Japanese verbs.

Oyane, Terada, Togo, and Masui (2012) suggest vocabulary learning through categorized lists: four categories of verbs, four categories of nouns, two categories of adjectives, and a category of adverb. This learning material includes exercises in which learners choose appropriate words from three options to three sample sentences. For example, Chinese-origin loanwords used in Japanese meaning "to organize," "to manage," and "to operate" include a common Chinese character. This material enables learners to gain a better understanding of differences in synonyms and words which have similar spellings. A disadvantage of Oyane, Terada, Togo, and Masui's text is the absence of translations. The authors might not have recognized the usefulness of translations from the learners' first language. Similarly, Kato et al. (2007) demonstrate categorized Japanese vocabulary in the fields of society, environment, economy,

industry, culture, and others. Entry words, their antonyms, and collocational expressions including entry words are provided with their English, Mandarin, and Korean translations.

Matsuura, Kozuma, and Handa (2011) suggest strategies to efficiently guess pronunciations and meanings based on the *bushu* or radical included in every Kanji. Learners can be accustomed to focus on the *bushu* and alleviate their difficulty in memorization of pronunciations, meanings, and other features of Kanji. In addition, Matsuura, Kozuma, and Handa present English, Portuguese, and Korean translations of entry words and the major part of the main text.

Inamura (2007) presents 388 Kanji and 1,072 Japanese words for intermediate or advanced learners and states that the material can be used for both teaching in class and for self-learning. This book includes English, Mandarin, and Korean translations of listed Kanji and English translations of entry words. In addition, explicit presentation of phonetic accents of all entry words helps learners with accurate pronunciation. Ando, Eya, Abe, and Iijima (2014) focus on usages of Japanese vocabulary at N1, N2, and N3 (advanced and intermediate) levels of the Japanese-Language Proficiency Test (JLPT). This dictionary presents collocational words and expressions, synonyms, and antonyms, accompanied by English, Mandarin, Korean, and Vietnamese translations.

Shimada (2011), a general Japanese-language textbook for beginners, does not suggest any new learning approaches or methods for Kanji. However, to foster learners' ability to talk about actions with interlocutors, it provides several basic phrases, including, for example, Kanji that can be found in Japanese magazines (p. 260). This textbook focuses on the improvement of learners' active vocabulary and appears to be inspired by the Can-Do Statements in the Council of Europe (2001), which suggests common criteria for proficiency evaluation in European languages. The Japanese language is linguistically very distant from European languages, but the

Japanese-language textbook introduces similar criteria for beginners in Japanese. An advantage of Shimada (2011) is that it aims to help learners understand written text and express their will and opinions beginning from the earliest stages of Japanese-language learning. In addition, the learner-centered content of this textbook seems to enhance learners' motivation for writing and speaking production. Prioritizing what learners can do in a target language is certainly a trend in European countries and Japan; however, the disadvantage of this textbook is that it excessively limits the number of words presented on each page.

2.3 Efficacy of learners' first language in foreign language acquisition

Similarities and differences between a learner's L1 and L2 also play an important role in successful acquisition. Ringbom (2007), for example, insists on the usefulness of "cognates" in teaching and learning a foreign language, defining the term as "historically related, formally similar words, whose meanings may be identical, similar, or partly different" and states that this class of words can be used to facilitate both teaching and learning a foreign language (p. 73). Ringbom also points out that cognates having little or no semantic similarity between the L1 and L2 can hinder learning (p. 75).

In this study, cognates between two languages are not utilized; however, previous studies on efficacy of learners' first language in foreign language acquisition indicate benefits of utilizing semantic similarities in foreign language instruction because the degree of cross-linguistic semantic overlap between two languages is an important criterion for choice of vocabularies that would facilitate foreign language learning. In addition, past studies presented below also imply possibilities for applying the similarities between linguistically distant languages, which could assist the learning of basic Kanji by Malay-speaking students.

Ellis and Beaton (1993) compared the difference in learnability of cognate words and non-cognate words when teaching English as a foreign language. They found that the participants more easily learned cognates that were phonetically similar to their equivalents in their first language. Granger (1993) emphasized the benefits of cognates with almost identical meanings between English and other European languages, but also pointed out the possible disadvantages of using of cognates with partly different meanings when teaching foreign language vocabulary. Granger's study suggested that it was important to carefully selecting the cognates to be taught by verifying the degree of phonetic and semantic similarities between the learners' first language and the target language.

Swan (1997, p. 158) presents a contrastive list in English, French, Danish, and Swedish. Listed English words are *tree*, *wood* (as material), *wood* (as small forest), and *forest*. French corresponding words are *arbre* ("tree, arbor"), *bois* ("wood" as material and also "small forest"), and *forêt* ("forest"). In Danish, *træ* means "tree" and "wood" as material, and *skov* includes the meanings of "wood" as small forest and "forest." In Swedish, *träd* corresponds to "tree" and *trä* indicates "wood" as material. Swedish word *skog* has almost identical meaning with *skov* in Danish. As these examples suggest, English-speaking learners of French and French-speaking learners of English can memorize cognates rapidly, because the semantic distinctions between these languages are almost identical for most cognates (see also Schmitt, 2010, p. 73). Additionally, it is worth noting that the English word *forest* and French word *forêt* ("forest") both originate from *forestis* ("outside") in Latin (Stevenson & Waite, 2011, p. 557). This formal similarity may also help English-speaking learners of French and French-speaking learners of English.

Nation and Webb (2011, p. 62) also stress the effectiveness of showing relationships between words that share the same etymology. Their focus is on

facilitation of learning of word meanings in a target language. As possible entries concerning etymological relationship in a learners' English dictionary, they exemplify *visible*, *envisage*, *revise*, *supervise*, *visual*, and *vision* (p. 63). These words originate from *videre* ("to see") in Latin (Stevenson & Waite, 2011, p. 1616). All the abovementioned studies affirm the usefulness of learners' first language, especially when spellings or affixes have clear similarities between two languages. Laufer and Shmueli (1997) compare the benefits of several different ways to demonstrate the meanings of selected English vocabulary. The participants were Israeli university students learning English as a foreign language. Laufer and Shmueli provided the experimental group with vocabulary lists and single sentences with first-language translations while the texts distributed to the control group comprised only definitions or synonyms in English. Their research concluded that providing first-language translations enabled the participants to retain the selected vocabulary better, and that giving definitions or synonyms in a second language contributed less to their vocabulary learning. The learners' first language could convey far higher quality information or knowledge for vocabulary learning than the target language could.

All the abovementioned studies affirm the efficiency of learners' first languages, especially when spellings have evident similarities between two languages. The present study does not intend to utilize cognates across Malay and Japanese, but explores the effectiveness of explicitly presenting words with similar semantic scopes to Malay-speaking beginning learners of Japanese. Japanese words selected for the vocabulary test of the present study include pairs of Chinese characters that share a semantic component, and most Malay words for the test are pairs of words that share a root.

2.4 Principal features of Chinese characters (Kanji)

In this study, Chinese characters are defined as “ideographic letters, which have originally been used to write the Chinese language.” Each character is “associated primarily with a meaning rather than a sound” (Conning, 2013, p. 11). Since Chinese characters had been introduced to Japan around the fourth century or earlier, Japanese people started this writing system to write their language. Schellekens (2007, p. 102) emphasizes that although learners of a writing system that is completely different from that of their first language require time to recognize and get accustomed to the characters’ forms and sequences of strokes, their learning process can be substantially accelerated once the knowledge is stored in their long-term memory.

Kanji characters usually have two types of pronunciation called *On-yomi* and *Kun-yomi*. *On-yomi* is a type of pronunciation of Chinese characters borrowed from classical Chinese during different periods of time. *Kun-yomi* is Japanese native pronunciation given to Chinese characters used in the Japanese language. In Japanese, many native words are written with Chinese characters. However, if these words made of more than three syllables, they are usually written with Chinese characters having related meanings, and these Kanji are followed by Japanese phonetic characters indicating one or more syllables near the end of the word; this is *Kun-yomi* pronunciation. Kanji used for words unique to Japanese rarely have a phonetic connection with the original pronunciation of characters in classical Chinese used in the periods when Chinese characters and their pronunciation were borrowed into classical Japanese. For example, *utsukushii* 美しい (“beautiful”) is a proper Japanese word. This word can be spelled by only using phonetic letters, but it is normally spelled with the Chinese character 美, which means “beautiful,” and phonetic letters indicating the syllables *shi* and *i*. When 美 is used as a part of Chinese-origin words such as *bijo* 美女 (“beautiful woman”), it is pronounced *bi*; this is *On-yomi* pronunciation. Therefore,

most Chinese characters used in Japanese have multiple pronunciations. Demonstrating Japanese words that share meanings and common Kanji characters to Malay-speaking students will assist students in learning Kanji characters as groups of Japanese words that contain a common Kanji that is considerably different from a Malay word.

Shuōwén Jiězì is a dictionary of Chinese characters compiled in China in A.D. 100 (The Society for Teaching Japanese as a Foreign Language 1990, p. 275). It classifies Kanji into six classes called *Liùshū*, which means *six (types of) writings*. Those in the first class, *Xiàngxíng* (written with the same Kanji as Mandarin but pronounced *Shōkei* in Japanese) originated as pictograms (p. 273). The second class, *Zhǐshì* (Japanese *Shiji*), was originally ideographic. The third class, *Huìyì* (Japanese *Kaii*), contains compound ideographs (ibid.). The fourth class, *Xíngshēng* (Japanese *Keisei*), contains phono-semantic compounds. These four classes cover the primary strategies for generating Kanji (ibid.). The fifth class, *Zhuǎnzhù* (Japanese *Tenchū*) literally means "changed interpretation," has no common definition because the abovementioned dictionary did not clearly explain this category. The sixth class, *Jiǎjiè* (Japanese *Kasha*), is not another type of characters but the "use of another Kanji with a similar pronunciation" to indicate a word that was originally spelled differently (p. 274). Koda (2005a, p. 79) lists the massive number (2,834) of Chinese characters taught in the six years of primary education in China; however, she also indicates that more than 80% of the Chinese characters consist of a combination of semantic and phonetic components. In addition, she exemplifies characters such as 湖 ("lake"), 池 ("pond"), and 洋 ("ocean") that share the semantic component or radical (氵) having a holistic meaning of "water" (p. 80). Shu and Anderson (1997) highlighted the importance of the development of recognition skill on character components for learners of Chinese characters.

Shirakawa (2007) provides etymologies and interpretations for approximately

7,000 Kanji. Shirakawa (2007) states that 目, meaning “eye,” originates from a pictogram of a human eye (p. 855). Likewise, 人 (“person”) originates from a picture of a person (p. 496). 見 (“to see; look”) was originally a compound letter of 目 and 人 (p. 265). 水 (“water”) and 氷 (“ice”) also came from their pictures (pp. 500, 752). However, 見 does not cover all words related to the acts of seeing or looking. Another character, 視, is included in words such as 視力 (“eyesight”). The left part of 視 originally depicted a table used for religious rituals, and the original meaning of 視 was “to see God.” As time passed, 視 gradually took on a meaning similar to 見. The main element of each character shows its global meaning and is called *bushu* or radical. This is the primary reason why more than ten thousands of different Kanji or more exist and many of them share the same radicals. 雨 (“rain”) originates a drawing of rain (p. 39), and it was used to create the character 雲 (“cloud”) (p. 43). The upper component of 雲 (“cloud”) is 雨 (“rain”). 食 (“to eat”) is included in 飯 (“rice”), 飲 (“to drink”), and many other characters. Since rice has long been a staple food for Chinese people, its character 飯 (“rice”) also means “meal” when used in compound with words such as 晩 (“evening”). Another Kanji dictionary with etymological interpretations, Shirakawa (2003, p. 18), states that 飲 (“to drink”) originally did not contain 食 (“to eat”) as its radical but it later replaced the previous radical because of analogy with “eat.” Thus, Chinese characters have their own special system of word connection among those that share the same radical in the characters.

2.5 Word recognition and learning strategies for Kanji characters

This section reviews recent studies regarding Kanji characters as an essential basis for teaching Japanese as a foreign language (JFL). These include studies on word

recognition and learning strategies for Kanji characters. Using a six-scale questionnaire, Shimizu and Green (2002) investigated the strategies and attitudes of Japanese-language teachers toward teaching Kanji. The respondents to their survey were 251 Japanese-language teachers in the US. Although many approaches to facilitate Kanji learning have been developed, more than 70% of the respondents agreed with and supported assignments of repeated writing practice of each Kanji and around 65% of the total respondents preferred etymological explanations on the taught characters. The respondents' reports are, however, affected by personal resistance to particular types of strategy. Using a questionnaire adapted from Bourke's (1996) inventory of Kanji learning strategies, Rose (2012, 2013) analyzed 12 Japanese-language learners' use of different types of Kanji learning strategies such as cognitive learning strategies, mnemonic strategies, motivation-control strategies, and learning-control strategies. The research results indicated that while completing the questionnaire, learners frequently reported their use of pictorial-association strategy, a cognitive strategy; however, during personal interviews aimed at stimulating the participants' recall, learners revealed that they use mnemonic strategies more frequently than had been indicated on the questionnaire. Some participants appeared to have been reluctant to report their use of simple memory strategies in which they try to connect meaning and pronunciation of Kanji characters primarily by inventing stories. One of the respondents of Rose's (2012, 2013) study, who was able to utilize mnemonic strategies, limited their use only when he could associate the meanings of Kanji components with the actual meaning of the character. Another respondent, who only focused on learning characters' form using memory strategies, frequently failed to connect their forms with their meaning. Many learners do not successfully associate either of the two elements with Kanji forms. Therefore, Rose's (2013) study emphasized the importance of building meaningful associations between the meaning and pronunciation of targeted Kanji characters using

a mnemonic approach.

Flaherty and Noguchi (1998) compared the efficiency of the Component Analysis method and the Whole-kanji method. The Component Analysis method is used to encourage learners to better recognize main components of each character, whereas the Whole-kanji method demonstrates Kanji characters without instruction on their components. Fourteen English-speaking university students who studied Japanese as a foreign language in Ireland and fifteen English speakers who studied Japanese as a second language in Japan participated in their study. They hypothesized that both the groups of participants would benefit more from the instruction using the Component Analysis method than that using the Whole-kanji method in both a short term and a long term. They randomly selected 30 Kanji characters that participants had no knowledge of before their test and assigned them to three different groups. Their study instruction using the Component Analysis method was elaborated based on Heisig (1996) and De Roo (1982); it assisted learners in decomposing each character into components and recognizing the meaning of each constituent. According to the tests administered immediately after instruction, both groups of participants who were provided with instruction based on the Component Analysis method outperformed the other groups.

Perfetti, Zhang, and Berent (1992) comparatively examined word reading process of English and that of Chinese characters in Mandarin. They proposed that phonology is the most essential element that is activated when native Mandarin speakers are reading the characters. In addition, Perfetti and Liu (2005) suggested that different writing systems such as alphabetic (e.g., English and Spanish), syllabic (e.g., *Kana* phonetic characters in Japanese), and logographic (e.g., Chinese characters) systems require different reading and word recognition processes for readers, particularly, for native speakers of a language. Bassetti (2005) explored native English and Mandarin speakers' word recognition using a Mandarin text that included 300 word

boundaries without spaces and consisting of 342 Chinese characters. Her study focused on a word-segmenting task in Mandarin that was completed by 60 native English-speaking university students, who had learned Mandarin for three or four years and 60 native Chinese speakers from China, whose limited knowledge of English would not affect the results of her study's task. The results suggested that the English-speaking participants segmented Mandarin words based on the conventional distinction of parts of speech in English, whereas Chinese-speaking participants tended to recognize multiple words as a minimal lexical unit, for example, Mandarin words meaning "the seventeenth century" included in "seventeenth-century Europe" (p. 345). Therefore, Bassetti concluded that English and Chinese speakers' patterns of recognition of minimal lexical units were significantly different. These patterns of recognition were influenced by the writing systems of the readers' first languages and the concept of a word in their minds.

Koda (2000) explored the characteristics of the development of Korean- and Chinese-speaking English learners' morphological awareness. The Korean language is written in *Han'gul* syllabary characters that include consonants and vowels. Chinese-speaking learners are primarily accustomed to Chinese characters that do not have a morphemic similarity to the Roman alphabet of English. The results indicated that the Korean-speaking participants' morphological and structural awareness of the given English text was superior to that of the Chinese-speaking participants. Her study suggested that phonological transparency of Korean characters facilitates Korean speakers' information extraction from the printed English text. Koda (2005b) summarizes that metalinguistic awareness acquired in the first language contributes significantly to the learning of another writing system and developing second-language reading competency. She also emphasizes that an increase in the visual input of the target language plays an essential role in the development of information extraction

abilities required for reading texts in another language.

Mori (1998, p. 72) suggested that native English-speaking learners of Japanese may not accept phonologically ambiguous representations in the target language well because they have been primarily accustomed to a phonographic writing system; while reading Japanese, however, they should limit their use of phonological processing strategies considerably. Mori's study examined the impacts of learners' first language and phonological processing among 20 American native English-speaking students and 20 non-American students, who had completed approximately 100 hours of formal Japanese learning at the same university. The latter group included 7 Chinese and 13 Korean students who used a meaning-centered reading processing for their first and target languages regularly and have knowledge of Chinese characters before attending the Japanese course at the university. Mori administered a test that included a short-term recall task on 10 phonologically accessible Kanji characters and 10 pseudo-characters of which no participant could identify the pronunciation. The results revealed that the unpronounceable pseudo-characters impeded the native English-speaking participants' phonological reading processing but did not significantly affect the performance of the other group. Therefore, Mori concluded that learners' first-language knowledge and word processing strategies could have a significant impact on their recognition of Japanese Kanji characters.

However, Matsumoto (2013, p. 163), who discusses word recognition models for Chinese characters in Mandarin and Japanese, points out that when readers access semantic information of Chinese characters, their orthographic processing is more closely connected with comprehension of meaning than their phonological processing. Zhou et al. (1999) emphasize that more than 80% of the components of Chinese characters represent partial semantic relationships to the whole character, but less than 40% of the components include hints on the pronunciation of the character. Zhou and

Marslen-Wilson (1999, p. 587), who compared the extent of phonological and semantic processes in reading Mandarin, affirm that there was no significant mediated priming effect for tested homophones without orthographic similarity. Using a computerized vocabulary task and a related questionnaire, Matsumoto (2013) examined Kanji word recognition proficiency of beginning and intermediate Japanese learners who were native English speakers and another group of beginners whose first language was Mandarin, which has a logographic writing system. She affirms that word recognition strategy based on learners' first language helps their Kanji recognition according to the extent of similarities between their first language and Japanese. Intermediate learners who participated in Matsumoto's research relied on their first language knowledge compared to their second language knowledge when learning Kanji characters.

Kato (2002) examined the efficacy of four intervention activities in supporting the learning of Kanji characters for 134 first-year students at a major Australian university in Sydney. Among the participants, 69 students had previous knowledge of Chinese characters and remaining 65 students did not before they enrolled in the Japanese Department of the university. One of the four methods was called the "Learning Strategies Report" activity, in which four to six students primarily discussed learning strategies for Kanji characters. Another activity called "My Goals and Success" assisted students in managing their study time using a printed booklet for self-evaluation and goal setting. According to the results of a questionnaire survey on the one-year implementation of the activities, participants who did not have previous knowledge recognized the benefits of the "Learning Strategy Report" most frequently, whereas most of those having some background knowledge of Kanji characters evaluated the time management activity (Kato, 2002, p. 69). The answers of the no-background-knowledge participants indicate that they most frequently require learning strategies to enhance their knowledge of Kanji characters. Kondo-Brown

(2006) conducted a Kanji test and a questionnaire survey on the Japanese reading ability and motivation to learn Japanese among 43 native English-speaking learners of Japanese at a university in Hawaii. Her research results demonstrate a stronger correlation between participants' test scores and the *Self-Perception of Japanese Reading Ability* variable in comparison to their scores related to reading comprehension skills. She concluded that insufficient Kanji knowledge of the learners has considerably negative effects on the Kanji reading process and motivation to read Japanese, particularly, unknown Kanji characters. Therefore, her research suggests that teachers need to maintain learners' self-perception of Kanji reading skills at a high level.

Mori (2014) summarized studies about Kanji processing and learning from approximately the past 20 years. This research describes that knowledge of each Kanji consists of various facets such as the visual complexity and multiple pronunciations of each character. Studies indicate that learners whose first language is not Mandarin or another Chinese language variety need to develop and efficiently utilize visual or non-phonological processing strategies to systematically learn Kanji characters. As such learners improve their Kanji processing skills, the comprehension of visual and semantic features of Kanji characters gradually deepens (Mori, 2014, p. 414). In addition, Everson (2011) conducted a comprehensive review of recent studies focused on the teaching of Arabic, Chinese, Hebrew, and Japanese, all of which have non-Latin character writing systems. His study emphasizes the importance of developing the ability to exploit the semantic elements of the characters from an early learning stage as this skill enables learners to efficiently recognize and infer the meanings of unknown words (p. 263). It was also stressed that by improving their recognition of each character's semantic components, learners can more easily remember the characters than through rote memorization (p. 264).

Chikamatsu (1996) is a comparative study on the word recognition strategies of

American and Chinese learners of Japanese. The study involved two groups of students who were native speakers of English and Mandarin, respectively. They were provided with Japanese words written in *Kana* phonetic letters, including pseudo-words. While identifying whether the given words were authentic Japanese words or not, American learners more frequently used strategies related to phonological processing and Chinese learners more often relied on visual processing that is frequently used in reading their first language. Chikamatsu's study suggests differences between word processing techniques used by learners familiar with an alphabetic writing system and those primarily accustomed to a logographic system. Chikamatsu (2006), who examined English-speaking learners' development of Japanese word recognition skills, affirms that the group of participants obtaining high scores most frequently recognized the visual features of the tested words, rather than the phonetic features.

Toyoda (2007) proposed several approaches that emphasized the improvement of word-level processing skills to enhance autonomous Japanese vocabulary learning. In particular, Toyoda highlighted the importance of the explicit demonstration of the Kanji radical of each character and its holistic meaning. In addition, to enable learners to realize how the semantic connections between Kanji characters and the radicals indicate the basic meaning, Toyoda recommended explicitly presenting pairs or groups of Kanji characters with a common semantic indicator that maintained a close semantic relation to the actual meaning of the characters.

Mori, Sato, and Shimizu (2007) administered a 75-item Kanji test to 80 students learning Japanese in two US universities. The test included a section on radical awareness that examined the students' productive use of the knowledge of radicals in a given context. For example, one of the test questions in which 銅 ("bronze") was the correct answer, there were three similar characters 同, 胴, and 洞 as incorrect options. Participants were required to identify the meaning of the radical of 銅, which is related

to “metal.” The main objective of the test was to evaluate the participants’ learning of Kanji characters and their related radicals. The mean (0.63) and standard deviation (0.22) of the test pertaining to the radical awareness section as well as the results from the other four sections, affirmed that a majority of the participants were able to use their previous knowledge of Kanji characters and radicals on the test.

The abovementioned studies contribute to the elaboration of the vocabulary instructions and tests used in this study, which explicitly present Kanji components’ meanings to assist Japanese-language learners in recognizing semantic similarities between selected Japanese words and their Malay equivalents.

Studies on Kanji radicals and other semantic components, exemplified by Chikamatsu (2005) and Mori (2014), suggest that positions of a Kanji component can influence learners’ recognition and processes. These studies also indicate that categorization of Kanji characters into several types is beneficial to the identification of degrees of difficulty among the types.

Since semantically similar pairs are limited in number between Japanese and Malay, this study does not aim to associate the pronunciation of selected Kanji characters with either their forms or the phonetic features of their Malay equivalents. Moreover, the written instructions distributed to the experimental group of the tests in this study only explain Kanji components’ meanings based on conventional interpretations, such as in Shirakawa (2007). Several other approaches to facilitate Kanji learning and memorization, such as those suggested in Heisig (2011), Stout and Hakone (2011), and Grant (2013), will be discussed in Section 2.7.

2.6 Visualization utilized for Kanji teaching

Yatabe (2010) introduced a learning tool, the *Kanji Jukugo Network* (“Kanji idiomatic vocabulary network”), to a Japanese language class to introduce specialized Kanji

vocabulary at Tokyo University of Marine Science and Technology, Tokyo, Japan. This was a reading class of marine-science-related Kanji oriented to postgraduate students from foreign countries. Postgraduate students from abroad except those from China, Taiwan, and Korea typically entered this university with either no knowledge or only limited basic knowledge of the Japanese language (p. 86). Most of them wrote their theses and communicated with their professors in English. However, they wished to have research-relevant reading skills in Japanese because it is beneficial for their studies.

Consequently, Yatabe intended to facilitate their learning of Kanji related to marine science through a series of 13 lectures, teaching five characters in each class. To prepare the lectures, she consulted a Japanese dictionary on marine science vocabulary and selected 65 Kanji (p. 90). She also presented 230 Japanese words containing these Chinese characters (p. 90). Her objective was to foster learners' awareness and understanding of the network of words sharing a common Kanji (p. 87). After the presentation of the *Kanji Jukugo Network*, she gave a reading text that contained the new Kanji from the lesson and marine vocabulary comprising these Kanji.

There are several examples of the *Kanji Jukugo Network* worth considering. The Kanji 海 ("sea"), which includes the *sanzui* radical (氵) originating from the Kanji 水 ("water"), is presented at the center of the network. Eleven additional Kanji are presented radiating from 海 (p. 93). When each of the 11 characters follows 海, they form a compound word. Arrows link 海 with each peripheral Chinese character such as 水 ("water") around which six characters are shown in the same way. A circle surrounds each Kanji. Several characters presented in the network share the common radical. The explicit presentation of semantically connected Kanji appears to help students to learn the listed Kanji by gaining a better understanding of the Kanji vocabulary system. The number of new Kanji presented in each lesson may not have

been cognitively excessive. Cowan (2001, p. 114) suggests that the mean memory capacity in adults is three to five units of information.

Tokuhiro (2010) introduced a learning tool called concept maps called *Gainen Chizu* to an advanced-level Kanji class for multi-national students at Waseda University, Tokyo, Japan. It took seven hours for the activity with the learning tool. In the first class of this activity, each student was asked to bring three pieces of A4-format blank paper and a list of vocabulary on a category of personal interest. Besides dictionaries, samples of the *Gainen Chizu* were available in the class. The first class was allotted to writing each learner's own Concept Map. First, each learner wrote words from his or her own vocabulary in the *Gainen Chizu*. Second, he or she added related words found in dictionaries and those given by other classmates. In the second lesson, Tokuhiro distributed students a sample *Gainen Chizu* she had constructed a graphically presented list of approximately 300 words related to nature and environment. She distributed one version written with Kanji and *Hiragana* phonetic letters, another version written only in *Hiragana* and its English translation. Each Japanese word in the original list was translated into one or two English words, with the same or similar meanings. Tokuhiro et al. (2010), on the basis of Tokuhiro's studies, proposed similar lists called *Goi Mappu* ("vocabulary map") on nature, everyday life, food and drink, clothing and home, public places and transportation, among other themes. This learning material was oriented to intermediate-level learners. In addition to the two abovementioned versions in Japanese and their English translations, this book presents Chinese and Korean translations as well as one or two sample sentences concerning some of listed words and related words not in the lists. This book will facilitate the memorization of Japanese vocabulary by English-, Chinese-, or Korean-speaking learners.

Despite the potential benefits that this tool may offer, there are some weaknesses. First, the word-by-word English translation has limitations. When the category of

vocabulary is concrete, such as nature, many Japanese words have corresponding English words. However, most abstract vocabulary of these languages does not correspond exactly. Moreover, the *Gainen Chizu* is intended to enhance learners' awareness of networks of vocabulary but might not be as efficient if the amount of vocabulary presented in the sample list is excessive; since human cognitive capacity is limited, it may be desirable to present fewer words (cf. Waring & Nation, 2004). Furthermore, the effectiveness of this learning tool will be limited when learners are not motivated to learn particular groups of vocabulary (cf. Dörnyei, 2001, 2002, 2003). Additionally, this learning tool can be a burden for teachers, because each learner may have a wide range of interests. For this reason, it is a difficult and time-consuming process for teachers to prepare lists of varied types of vocabulary to accommodate the individual needs of each learner.

Takagi (1995) conducted experimental tests to examine the efficacy of a presentation of several radicals of Kanji, because Takagi assumed that improving the learners' skill of visually identifying Kanji would be meaningful for learning them. The participants included 13 students from an American university, who were beginners in Japanese. Takagi selected 158 Kanji presented as 79 pairs of visually similar characters. As a preliminary test, she asked the participants to carefully examine the pairs of Kanji and circle the shared part of each pair. After the test, she delivered several lectures to the participants to help them gain a better understanding of the basic structure of Kanji. After these lectures, she administered a second test wherein 38 out of the 158 Kanji were shown. In preparing the test, she modified part of each character using a word processor. The participants were asked to indicate the false part of each character. In comparing the results, a significant difference was found between the participants' scores in the preliminary test and those in the second test (p. 132). However, Takagi's article does not mention which parts or radicals of Kanji were most often correctly

identified; such information could benefit instructors of Japanese beginners who are learning to visually identify Kanji.

2.7 Textbooks on Japanese vocabulary and Kanji for Japanese-language learners

In recent years, several new textbooks for Kanji writing practice have been published. Tokyo International Japanese-Language Institute (2014) shows pronunciations of approximately 310 Kanji for beginners, their order of strokes, and sample uses. That exercise book is based on the *Minna no Nihongo* (Three A Network, 2012) series of Japanese-language textbooks. It has repetitive exercises for learning the listed Kanji and provides pronunciation and spelling exercises. The sample sentences in the questions are identical in both parts. Therefore, Japanese-language teachers can use these materials according to their students' needs. The Chinese characters, which are not assumed to be familiar to beginning learners, are accompanied by phonetic letters indicating their pronunciation.

Nishiguchi et al. (2014), a Kanji textbook included in the *Minna no Nihongo* series, focuses on Kanji pronunciations, forms, and order of strokes, as well as their usage. Understanding appropriate contexts for their usage is indispensable for learners to gain proficiency, especially for accurate language use in written texts.

Another textbook, Nakanishi and Takeda (2013), presents Kanji for beginners. Each character is also separated into as many as eight independent parts including its *bushu* (radical). Many textbooks focus on only the radicals of Kanji, but this work is characterized by its presentation of all components. Although the sizes of these components are not exactly the same as those included in the characters, recognizing each Kanji as an aggregation of separable parts may help Kanji learning.

In addition to vocabulary textbooks for beginning learners of Japanese, numerous vocabulary textbooks are aimed at those preparing for the Japanese-Language

Proficiency Test (JLPT). For example, Saito, Numata, and Kato (2012, 2013) are textbooks focusing on vocabulary for the N5 and N4 (lower and upper elementary level) tests of the JLPT, respectively. Each page includes several cartoon-like illustrations related to approximately 30 words presented. The illustrations can be more accessible for beginning learners with little knowledge of Kanji than other types of visual approaches, such as the Vocabulary Map (cf. Tokuhiro et al., 2010). Japanese words are shown with their usual spelling including Kanji and *Kana* phonetic representations. In addition, complementary phonetic characters showing the pronunciation of the Kanji are given for each character. The vocabulary presented is categorized into different topics such as health, household items, office supplies, public places in the city, and words used to express opinions and explain things to others. The textbook's appendix includes English translations of the presented vocabulary and indicates the stressed vowel of each word. Except for those including phonetic instructions, most Japanese-language vocabulary textbooks do not provide this information. Therefore, the phonetic instruction in the appendix is a unique and helpful resource for learners. A vocabulary textbook to support the preparation for the N3-level examination of the JLPT by Ando et al. (2010) offers a broad range of words related to selected vocabulary. One of its advantages is the numerous examples of noun and adverb forms of selected adjectives, verbs related to selected nouns, and compound words. This assists learners in recognizing groups of associated words as a unit and categorizing them systematically.

KCP Gakuen (2012a, 2012b) presents Kanji by subject such as "Health," "Society," "Nature and Environment," and "Employment." A compact disc attached to each volume is one of the useful features of this series of books. Each volume consists of 50 units, and each unit presents five characters and a sample text of one or more sentences containing all five Kanji. All sample texts are recorded on the attached compact disc. For each character, several word examples and sentences built with the

sample vocabulary are shown as well as their pronunciation and order of strokes. An attached appendix of the book presents English, Chinese (in both simplified and traditional characters), Korean, Thai, and Vietnamese translations of all the sample words in the entries. This is another advantage of this series; however, this series does not present translations of sample sentences, which is a point of inconvenience. A possible reason for the absence of translation is that this series was published on the assumption it would be used in Japanese language schools, and teachers would explain the meanings of the sample sentences in class.

Iijima et al. (2012) present Japanese vocabulary for preparation for the N1-level (most advanced) examination of the JLPT. The principal advantages of this work are the *Rensō mappu* ("concept maps") that aid in the vocabulary learning and provide English, Mandarin, and Korean translations of the entry words. An advantage of this textbook's translations is its presentation of both the simplified Chinese characters employed in Mainland China and their corresponding traditional forms used in Hong Kong and Taiwan (the simplified and traditional forms are sometimes quite different: simplified Chinese characters meaning "leaf" is 叶, while its traditional form is 葉. Many Japanese-language textbooks published in Japan only use the simplified forms to save space. Another vocabulary textbook by Iijima et al. (2016) utilizes the same types of concept maps for Japanese vocabulary at the N5 and N4 (lower and upper elementary) levels of the JLPT. Each concept map is made of approximately 20 to 30 basic Japanese words. The number of words demonstrated in each map does not pressurize learners at these levels, and they can add other associated words to the maps according to their interests and needs. In addition, the textbook provides English, Mandarin, Korean, and Vietnamese translations for selected vocabulary items.

The Japan Foudation (2011, p. 69) points out the advantages and disadvantages of presenting translations in learners' first languages to teach Japanese vocabulary. The

main advantage is that presenting learners' L1 translations enables them to rapidly understand the meanings of Japanese vocabulary. Larsen-Freeman and Anderson (2011, p. 97) also highlight that foreign language learners' understanding and confidence can be enhanced by using their first language as it can help in efficiently conveying the meanings of words from the target language. On the other hand, the main disadvantage is the difficulty of demonstrating the exact meanings of notions and concrete things that are closely related to a foreign language and culture, but do not exist in the learners' first language. Another difficulty is the difference in the scope of meanings between the learners' first language and Japanese. For example, the Japanese verb *kiru* ("to wear") is used for shirts or coats and another verb *haku* ("to wear") is used for trousers and skirts. However, the English verb *to wear* can cover both usages. In other words, meanings of words between different languages often do not exactly correspond with each other, and it is necessary to specify context to prevent learners' misunderstanding.

Other textbooks aim to encourage learners to mentally connect the meanings and forms of the characters. Nishiguchi (2013) presents Chinese-origin Japanese words consisting of two Kanji characters for learners preparing to take the N2-level examination of the JLPT. Comprising of 67 units, this textbook indicates the primary meanings of two Kanji to help learners visualize and mentally connect the meanings of the words and their components. However, Nishiguchi's method has limitations. For instance, to analyze the Japanese word *taisetsu-na* 大切な ("important"), the literal meaning of "big" is shown for the first Kanji and that of "cut and slice" is shown for the second one; however, these images do not appear to assist Japanese-language learners in understanding the actual meaning of the selected word (p. 28). They are confusing for learners, especially because the meaning of neither character is closely related to the actual meaning of the corresponding word. Grant (2013) has an English textbook on Chinese characters used in Japanese. The book addresses the 520 most essential Kanji,

allotting one page for the 180 most common Kanji and half a page for each of the other characters. It provides the meanings of the characters, illustrations to aid learners' visual understanding of Kanji components, sample sentences, and descriptions to help learners' memorization of the selected Kanji. A Kanji textbook for beginners by Shimada (2012) creates awareness among learners regarding an important aspect of the basic Kanji structures, i.e., the combination of a sign of meaning and a hint to the pronunciation of the character. Providing illustrations and explicit demonstrations of each component, the book exemplifies 語, 時, and 週 in which the components 吾, 寺, and 周 respectively indicate the character's pronunciation. Shimada's (2012) method helps visualization of each Kanji component and encourages learners to learn a broader range of Kanji characters. Okamoto and Ujihara (2010) present Japanese vocabulary written in Kanji. The textbook is targeted to learners preparing to take the most advanced level of the JLPT examination (N1). They focus on the words consisting of one or several common Kanji for the two main reasons: to raise learners' awareness of similarities in word forms and meanings, and to prevent confusion between common characters and pronunciations.

Stout and Hakone (2011) present the most frequently employed 205 Kanji in current Japanese. Their main approach is the enhancement of visual memorization. For example, they present 土 ("earth, ground") as "a person standing on the ground" (p. 34) and 王 ("king") as "a person standing on the ground, with a crown" (p. 36). Cartoon-like illustrations of a person and a king standing on the ground are drawn behind each of the characters. This method may facilitate learning of Kanji, but it poses a problem. Stout and Hakone prioritize the simplicity of explanation and often present incorrect information on the etymology of some characters. For example, 国 ("country") is described as "The walls around the country to protect the king's jewels" (p. 218). However, this character is one of the various characters which were simplified

because of a Japanese spelling reform in 1946. Its traditional form is 國 and its meaning is not related to “king” at all. In addition, Stout and Hakone (2011) and several Malaysian Japanese-language textbooks adopt a similar practical approach for Kanji presentation. The coincidence seems to be related to communicative needs of learners of Japanese as a foreign language in Malaysia and other countries regarding frequently used words and Kanji. The Kanji 好 (“to like; good”), which is, for example, included in the Japanese word 好き (“to like”), is also shown alongside the Kanji 女 (“woman”) and 子 (“child”) (p. 54). Stout and Hakone’s presentation approach is same as that of Chin et al. (2010), a Malaysian Japanese-language textbook mentioned in Section 2.5. Besides this, the Kanji 私 (“I”) is taught in the last year of six-year elementary school in Japan. However, according to Tono et al. (2013) which presents 5,000 most frequently used Japanese words, the word *watashi* 私 (“I”) is the 42nd frequently used word (p. 12). Stout and Hakone (2011, p. 138) present the Kanji as one of the 100 most frequently used characters.

Millen (2010) also provides similar brief descriptions of components included in 464 essential Kanji. This textbook accurately presents the original meanings of Kanji components. For example, Millen successfully points out a common component 買 shared in the Kanji 売 (“to sell”), which was originally written 賣 (“to sell”), and another character 買 (“to buy”) (p. 98). Another Kanji textbook by Hadamitzky and Spahn (2012) also provides approximately 2,100 Kanji written in forms currently used in Japanese, along with obsolete traditional forms for more than 100 characters. Hadamitzky and Spahn’s (2012) and Millen’s (2010) books make learners more aware of the original phonetic connections between the Kanji characters 員 (pronounced *in*) and 圓 (pronounced *en*; “circle”; “Japanese yen”), which is the original form of 円.

A Kanji textbook for the N4 and N5 (upper and lower elementary) levels of the

JLPT written by Karazawa, Kigami, and Shibuya (2010) depicts ancient forms of 310 basic Kanji characters and provides the meanings of their components. However, the disadvantage of this textbook is that it only focuses on the meanings conveyed by each component. Nonetheless, but many components of Chinese characters are used as hints for the pronunciation of the character.

Simple visual memorization of Kanji without focusing on semantic connections between the L1 and L2 has limitations in terms of efficiency. Only a limited number of these ideograms' components originate from pictograms and other characters share morphological or semantic similarities. Visual memorization is hence only an effective learning method for a few hundred Kanji.

Grant (2013) is an English textbook on Chinese characters used in Japanese. He adopts a presentation approach similar, but more comprehensive, to Stout and Hakone (2011). This material addresses the 520 most essential Kanji. This book allots one page for each of the most common 180 Kanji and a half page for each of the other characters. The explanation includes sections on the meaning of the characters, illustrations helpful for visual understanding of the components of each Kanji, irregular reading, common words and compounds, common pronunciations, less common pronunciations, sample sentences, and descriptions helpful for remembering Kanji. Each Japanese word is shown in a conventional way and is also Romanized.

A Kanji textbook written in Japanese and English by Banno et al. (2009) presents 512 basic Kanji, demonstrated in the standard *Genki* series of Japanese-language textbooks. The book provides illustrations related to the original forms of each character and short stories comprising sentences to enrich learners' imagination and interest. These illustrations and stories can accelerate the visual learning of numerous characters within a limited time.

Heisig (2011) proposes an effective method for learning approximately the 2,100

Kanji called *Jōyō Kanji* (“Kanji for regular use”). The initial version of the list of these Chinese characters was published in 1981 by the Ministry of Education of Japan (currently, the Ministry of Education, Culture, Sports, Science, and Technology). His method is similar to that of Stout and Hakone, but without the cartoon-like illustrations. It is actually a descriptive dictionary: Index IV of the dictionary contains a cumulative list of all the key words and main meanings presented in the book. It is full of stories he made to foster learners’ self-learning; long descriptions exceed 10 lines. Since Heisig chooses the simplest manner of presentation, some of the word associations he proposes in his stories are illogical or etymologically incorrect; this is a limitation of learning methods involving the enhancement of visual memorization. The shortest descriptions use only two words, for example, “person ... book” for 体 (“body”) (p. 260). He connected 人 (“person”) and 本 (“book”) to facilitate the readers’ memorization of the relevant Kanji. 体 (“body”) is a simplified Japanese Kanji, which has been in official use since 1946. Its traditional form 體, which contains 骨 (“bone”) and 豊 (“abundant”), links with neither 人 nor 本. The Research Group for Learning Methods of Kanji for Beginners (2011a, 2011b) proposes a learning method by facilitating learners’ visual memorization of Kanji. These learning materials present parts of characters up to five colors. This multi-color approach may certainly foster visual reception and memorization of Kanji, but this series does not introduce any other innovations.

Beuckmann, Watanabe, Kuramochi, and Takahashi (2008) and Beuckmann, Iwasaki, and Takahashi (2012) are Kanji textbooks with instructions in English, Indonesian, Thai, and Vietnamese. The former deals with the 300 most essential Kanji, whereas the latter deals with other 200 essential Kanji as the second step of Japanese Kanji learning. In the preface of these books, Mr. Hideo Takahashi, supervisor of this series, states that these textbooks were intended to present the meanings and

pronunciations of each Kanji separately and can be used even by novices who had not memorized the *Hiragana* and *Katakana* phonetic characters. In the sections on the meanings, the textbooks present brief stories in the four abovementioned languages and illustrations of each Kanji and its components. This approach is similar to those of Stout and Hakone (2011) and Grant (2013), but the illustrations of each Kanji comprise several steps and are intended to accelerate learners' visual memorization. Like Stout and Hakone (2011) and Grant (2013), the books often fail to respect the original meanings of the components of each character and emphasize providing stories that might interest learners. In the sections on the pronunciations, the books show several words containing the given Kanji, their spellings in *Hiragana* only, their transliterations in Latin alphabet, the meanings of each Kanji, and related words in the four foreign languages.

Sasaki and Matsumoto (2010b), a textbook on Kanji comprises eight units and mini-tests at the end of each Japanese-language unit. It shows English, Mandarin, and Korean translations of entries and phrases. Moreover, it presents Chinese characters that include the same radicals (*bushu*) and *On-yomi* pronunciations as well as Kanji having two *Kun-yomi* pronunciations or more. In addition, it focuses on synonyms, explaining the differences in meanings between synonyms that contain the same character. Another useful feature for learners is the description and explanation of homonyms sharing the same pronunciations but spelled with different characters.

Sasaki and Matsumoto (2010a), a textbook for N1-level Japanese vocabulary, includes native Japanese words usually written with both Kanji and phonetic characters, and highlights words sharing a common character such as 手 ("hand"), 出 ("go out, leave"), or 身 ("body") (pp. 60, 62, 76). In addition, they explicitly explore the similarities between various vocabulary features; for instance, they show verbs ending with the same syllables (pp. 82, 84). This presentation method successfully highlights

the phonetic similarities between words and is an advantage of the work. This feature distinguishes this work from Sasaki and Matsumoto (2010b), which mainly focuses on Chinese-origin loanwords written with Kanji.

2.8 Connection between previous studies and the present study

As discussed in Section 1.2, the current policy determining the presentation of Kanji characters in Japanese-language textbooks for Malaysian secondary school students limits opportunities to demonstrate multiple pronunciations of many Kanji characters and only approves the instruction of approximately 150 (cf. Appendix 1). This hinders Malaysian students from learning the several hundred Kanji characters necessary for very basic communication in Japanese. In addition, Malaysian secondary school teachers usually avoid explicitly explaining the meanings of the common components of multiple Kanji characters, thus giving learners no opportunity to recognize the crucial function of radicals. Elective Japanese-language classes in a majority of public universities in Malaysia also eschew time-consuming Kanji instruction, either entirely or partly. For example, a series of textbooks for students in an elective Japanese-language course at a major Malaysian university, such as Shaharuddin et al. (2016), Choong et al. (2016), and Ahmad et al. (2016), are entirely written in Romanized Japanese and do not teach the pronunciation of Kanji characters because of time and curriculum constraints. Such disadvantages encountered when using the current series of Malaysian textbooks could be alleviated through the explicit presentation of pairs of Kanji characters that share a common component.

The Component Analysis method proposed in Flaherty and Noguchi (1998) was based on the hypothesis that enhancing learners' focus on the components of Kanji characters taught in vocabulary experiments would enable JFL learners to rapidly understand the basic structures of Kanji characters. From this perspective, the author

established a presentation method that would accelerate learners' recognition of the common components shared by each pair of listed Kanji characters, which were demonstrated to the experimental group during the Kanji vocabulary tests. In addition, Koda (2005b), who examined the significant influence of metalinguistic awareness acquired in the learner's first language when learning another writing system, suggested the requirement for a vocabulary demonstration method that accelerates both Malaysian JFL learners' recognition of Japanese characters and their use of L1 vocabulary knowledge. Mori, Sato, and Shimizu's (2007) study, which used Kanji characters with several different components in its Kanji test, was an informative reference for the choice of Kanji characters used in the multiple-choice questions that made up the present vocabulary tests. Chikamatsu's (2005, 2006) studies, which examined development of Japanese word recognition skills among English-speaking learners, proved the primary importance of the visual features of Kanji characters and assisted the author of this study in selecting Kanji characters and their major components that could encourage Malay-speaking students' learning of Kanji characters and their relevant vocabulary. Concept maps for JFL vocabulary learning proposed in Tokuhiro (2010), Tokuhiro et al. (2010), and Iijima et al. (2016) were designed to help learners recognize multiple Kanji characters as pairs or groups. The presentation method proposed in this study is related to the visualization method in their studies. However, only two Kanji characters were shown as pairs in the sheets distributed to the experimental group. The purpose of this arrangement was to help participants concentrate on the visual features of the listed Kanji. The present study proposes the demonstration of semantically similar words and L1 written instructions regarding semantic similarities between the listed Japanese and Malay vocabulary items as the major originality of this study.

CHAPTER 3: METHODOLOGY

3.1 Research design and test procedures

3.1.1 Research design

This chapter describes the methodology of the present study.

As mentioned in Section 1.7, the research questions of this study are as follows:

1. Does the use of Malay to demonstrate Japanese Kanji and their Malay equivalents facilitate the recognition of semantic Kanji components and the learning of Kanji characters?

2. Does explicitly presenting semantic similarities between Japanese Kanji characters and their Malay equivalents assist Malay-speaking students in learning Kanji characters with approximately 10–19 strokes sharing a semantic component?

3. Do the three Kanji types proposed in this study help Malay-speaking students learn basic Kanji characters?

As presented in Sections 1.1 and 1.2, very few Japanese-language textbooks, published in Malaysia, use the Malay language as an effective medium language for Malaysian students. Certainly, simple demonstrations of similar Kanji characters in pairs or groups, without additional explanation, benefits students to a certain extent; however, such methods only show examples of similar Kanji characters to students without helping them understand the semantic connection between the listed Japanese words and their Malay equivalents. To propose a possible improvement to the current JFL teaching methods in Malaysia, this study examines ways to maximize the utility of Malay by enhancing teaching methodologies to help Malay-speaking learners to understand

semantic similarities between Japanese and Malay vocabularies presented in classes.

The author of this study will administer three Japanese vocabulary tests to native Malay-speaking students at a Malaysian university, who have not studied Japanese at any institution either formally or informally to ensure the equal level of proficiency in all test participants and statistically examine the exact effect of the presentation methods proposed by this study. Since the test participants will have had no prior learning experiences in Japanese, the vocabulary tests only include multiple-choice questions with four options to measure their degree of reception objectively.

This study focuses on the semantic similarities between Japanese and Malay. For example, the Malay word *cahaya* (root meaning "light") corresponds to the Japanese word *hikari* 光 ("light"), and *bercahaya* ("to shine") corresponds to *kagayaku* 輝く ("to shine"). In the same way that *bercahaya* contains *cahaya* ("light"), the Kanji 輝 in *kagayaku* 輝く includes 光 ("light") as its radical. In a similar way, the words *ikan* ("fish") and *perikanan* ("fishery"), which are derived from the same root, *ikan* ("fish"), correspond to *sakana* 魚 and *gyogyō* 漁業 respectively. Similarly, 漁 comprises 魚 ("fish") as its radical. The instructions written in Malay for the experimental group are intended to raise the learners' consciousness of such similarities in basic meanings shared between Kanji characters and Malay words.

3.1.2 Test procedures

For the vocabulary tests, the experimental group were given a list of approximately 30 Japanese words accompanied by their Malay equivalents, together with written instructions in Malay. The Japanese words were presented to the group as pairs, and each pair included a common component that indicated a semantic similarity between the Japanese and Malay words. Simultaneously, the control group will receive a list of the same Japanese vocabulary and corresponding Malay words, but without instructions.

Both the experimental and control groups were given 30 minutes to learn the words and another 30 minutes to answer the same multiple-choice test.

After the test, the number of correct answers was counted for each participant, and the average scores of the experimental and control groups were analyzed using Student's *t*-test. For each vocabulary test, the researcher analyzed the 10 characters (approximately) with the greatest difference in the number of correct answers. Welch's *t*-test was used to determine if there was a significant difference in the number of correct answers. Multiple linear regression was employed to measure the treatment effect size. In addition, bootstrapping (1000 Bootstrap replicates) was used to analyze the difference in the proportion of correct answers between the experimental and control groups for each type of Kanji.

Several new Kanji characters were selected for Test 2. To seek specialist advice and gain a better understanding of Japanese Kanji teaching in Malaysia, the author issued a questionnaire survey and conducted an interview with a Malaysian Japanese-language teacher at a Malaysian secondary school. To analyze several issues, such as the degree of difficulty for each type of Kanji featured in the study, a questionnaire survey was given to participants involved in Tests 1 and 2. To give a more balanced representation of the three types of Kanji characters, the author added approximately five characters for Test 3.

The three main reasons of presenting two words for each pair are as follows:

1. To encourage participants in the experimental group to focus to the maximum on semantic similarities of each pair of words
2. To equally demonstrate all pairs and make test questions of an even number as for example 30
3. To examine the utility of this presentation method for teaching in beginners' classes

and self-study in any location, especially where time-consuming methods must be avoided

The first version of the pilot test is presented as Appendix 2 (pp. 184-191) of this thesis. The participants in the pilot test were given a one-hour time limit to learn the given vocabulary, including all instructed characters, before answering questions. Appendix 3 (p. 192) is the vocabulary added to the second version of the pilot test. Appendix 4 (p. 193) demonstrates vocabulary additional to the third version of the pilot test. All these texts were written in Malay and Indonesian because this study initially intended to examine the effectiveness of the explicit presentation of structural and semantic similarities between Japanese as a foreign language and Malay or Indonesian as the learners' first or national language. However, the initial objective was modified because of the complex situation of the use of Indonesian as the national language of Indonesia. This complexity arises due to the fact that most Indonesians speak a regional language as their native language. Therefore, the main test and the revised test were only oriented to Malaysian university students who have not previously studied Japanese as a foreign language.

The participants in the vocabulary tests will be Malaysian university students who are native speakers of Malay. Prior to administrating the tests, the researcher will randomize the participants by asking each of them to draw a folded piece of paper from a box which assigns them to either the experimental group or the control group.

The author of this study expects that by explicitly presenting all three Kanji character types and their Malay equivalents through giving written instructions in the learners' first language, the experimental group participants will enhance their learning of the listed Kanji characters with a statistically significant difference compared to the control group participants.

3.1.3 Characteristics of the three similarity types in this study

Most concept maps introduced in Section 2.6 demonstrate certain similarities between the listed Kanji characters. However, they lack additional explanations of connections that can also exist in their other-language equivalents. A major weakness of these concept maps is the lack of analyses of similarities between Japanese and foreign vocabularies. In addition, as discussed in Section 2.7, simple visual memorization of Kanji with no focus on the semantic connections between L1 and L2 has limitations, as learners are not able to discover any similarities or links between the Japanese vocabulary shown in teaching materials and their first-language equivalents.

Tables 5, 6, and 7 respectively exemplify Type 1, 2, and 3 Kanji characters and their Malay equivalents proposed in this study, as demonstrated to the experimental group participants in the tests administered during this study. Common components in each pair of Type 1 and 2 characters mostly comprise fewer than 10 strokes. However, the number of strokes for second Kanji characters of these types mostly exceeds 10.

Table 5: Examples of Type 1 Kanji and Malay Words Shown to the Experimental Group

First Kanji in the Pair	Second Kanji in the Pair	Common Components
光 (“light”) and ***cahaya*** (“light”)	**輝** (part of “to shine”) and *ber**cahaya*** (“to shine”) (Root: *cahaya* “light”)	**光** (“light”)
魚 (“fish”) and ***ikan*** (“fish”)	**漁** (part of “fishery”) and *per**ikan**an* (“fishery”) (Root: *ikan* “fish”)	**魚** (“fish”)
火 (“fire”) and	**焼** (part of “to burn”) and	**火** (“fire”)

*ke**bakar**an* (“destructive fire”)	*mem**bakar*** (“to burn”) (Root: *bakar* “burn”)	

Among Type 1 word pairs, a common Kanji component and common Malay root in some of the word pairs (e.g., the Kanji component 火 “fire” and the Malay root *bakar* “burn”) have less semantic connections than other Type 1 words and all Type 2 words.

The Malay equivalents for Type 2 characters are compound words that include a common Malay word. The meanings of the shared Kanji components (女 “woman” and 目 “eye”) and those of the Malay equivalents (*perempuan* “woman” and *mata* “eye”) is almost identical. This is a major advantage of Type 2 similarity. Additionally, the position of the shared Kanji components is fixed to the left side of each listed Type 2 character. Therefore, this regularity will enhance participants’ recognition of one of the most usual positions of the main Kanji components.

Table 6: Examples of Type 2 Kanji and Malay Words Shown to the Experimental Group

First Kanji in the Pair	Second Kanji in the Pair	Common Components
妹 (“younger sister”) and *adik **perempuan*** (“younger sister”)	**娘** (“daughter”) and *anak **perempuan*** (“daughter”) (Root: *perempuan* “woman”)	**女** (“woman”)
眼 (part of “eyeglasses”) and *cermin **mata*** (“eyeglasses”)	**瞳** (“pupil of the eye”) and *anak **mata*** (“pupil of the eye”) (Root: *mata* “eye”)	**目** (“eye”)

Table 7: Examples of Type 3 Kanji and Malay Words Shown to the Experimental Group

First Kanji in the Pair	Second Kanji in the Pair	Common Components
聞 (part of "to hear") and men**dengar** ("to hear")	**聴** (part of "hearing") and pen**dengar**an ("hearing") (Root: *dengar* "hear")	**耳** ("ear")
鉄 ("iron") and **besi** ("iron")	**鋼** ("steel") and **besi** waja ("steel") (Root: *besi* "iron")	**金** ("gold, metal")

Common Kanji components in Type 3 characters and their Malay equivalents maintain a certain semantic connection. Thus, characters in this category will encourage learners to imagine and understand a shared basic meaning between the common components of the listed Kanji characters and the shared element shared by their corresponding Malay words. Moreover, the majority of Type 3 characters include more than 10 strokes and five (聞, 聴, 鋼, 鳴, and 縛) of them contain approximately 15 strokes, which would be the most difficult for participants to learn. Therefore, the presentation method would allow them to quickly discover the most important components of these complex characters.

Table 8 demonstrates the major characteristics of the three similarity types proposed in this study. Japanese Kanji characters and their Malay equivalents are categorized based on types of cross-linguistic similarities between the listed Japanese and Malay words. The main differences between the three similarity types exist in degrees of semantic similarities. In addition, the structures of Malay words equivalent to the listed Japanese words also relate to the three types, as all Type 2 Malay words are compound (e.g., *adik perempuan* "younger sister" and *anak perempuan* "daughter"). Word structures for Types 1 and 3 differ for each word pair.

Table 8: Major Characteristics of the Three Similarity Types

	Type 1	Type 2	Type 3
Degree of semantic similarities	High	Highest	Lower than Types 1 and 2
Structure of the listed Malay words	Simple or compound	Compound	Simple or compound
Meaning of Japanese and Malay words (Examples)	“light” and “to shine”	“younger sister” and “daughter”	“to hear” and “hearing”
Meaning of the common component	“light” (光)	“woman” (女)	“ear” (耳)
Meaning of the common Malay word	“light” (*cahaya*)	“woman” (*perempuan*)	“to hear” (*dengar*)

The degree of semantic similarities between the listed Type 2 Japanese and Malay words was highest among the three similarity types, as both Type 2 Japanese and Malay words and their shared elements have the same meanings. Type 1 Kanji characters and their Malay equivalents also share a high level of similarity. The similarity level between common Kanji components and shared Malay words in some Type 1 word pairs was lower than in Type 2 pairs. While Type 3 Kanji characters and the corresponding Malay words have almost identical meanings, their Kanji components and the shared Malay word share fewer similarities in meaning such as “ear” in Japanese and “hear” in Malay. For this reason, the term “lower than Types 1 and 2” is used in Table 8 to qualify semantic similarities between Type 3 word pairs. Word structures of the Malay equivalents are simple or compound for Types 1 and 3, and the structure of Type 2 Malay words is compound only. The listed Japanese and Malay

words have the same meanings (e.g., “light” for both the Japanese *hikari* 光 and the Malay *cahaya*). Similarly, Japanese and Malay words based on Type 2 and Type 3 similarities are very close in meaning.

3.2 Pilot study

3.2.1 Objective of the pilot study

The pilot study aimed to select the 30 most appropriate Kanji characters that would be used for the first test of the main study (Test 1). The pilot study utilized the following three word categories: (1) combinations of two or more root words or more, (2) combinations of two or more Malay-origin roots, and (3) derivations of a single root. As the pilot study aimed to examine the benefits of using different Malay roots that share common etymologies, two or more roots were shown in the majority of the lists used in the pilot test. In the three tests administered in this study, most of the vocabulary lists were rearranged to demonstrate similarities between Japanese Kanji characters and Malay words containing the common root.

3.2.2 Participants in the pilot study

A total of 25 students at two urban Malaysian universities participated in the pilot study. All of the participants had majored in natural science, and none of them had learned Japanese in any language institution officially. Therefore, the participants had almost no previous knowledge of Kanji characters and Japanese words that were used in the pilot test. Kanji characters, such as 火 (“fire”) and 焼 (“to burn; to grill”), had been added to the second and third version of the pilot test to demonstrate Japanese words and their Malay equivalents that share semantic similarities more clearly than the characters that had been removed from a previous version of the pilot test.

3.2.3 Kanji characters used in the pilot study

The pilot test consisted of 50 questions on the selected Kanji characters shown below. Tables 9, 10, and 11 exhibit the characters presented in written instructions of the pilot test. In addition, the tables indicate the frequency of each character according to Tokuhiro (2008), which covers approximately 2,100 Kanji characters (*Jōyō Kanji*) taught in Japanese elementary and junior high schools. Etymological information concerning the following Malay words of foreign origins is referred to "Loan-words in Indonesian and Malay (Koninklijk Instituut voor Taal-, Land- en Volkenkunde, 2007)."

Table 9: Kanji in Category A of the Pilot Test

1. 目 (48) and 眼 (1067)	2. 見 (27) and 視 (555)
3. 病 (467) and 痛 (950)	4. 学 (46) and 教 (131)
5. 心 (57) and 意 (97)	6. 味 (401) and 感 (238)
7. 上 (13) and 乗 (317)	8. 起 (243) and 建 (283)
9. 借 (903) and 貸 (940)	10. 明 (52) and 説 (247)
11. 増 (332) and 加 (191)	12. 通 (192) and 過 (439)
13. 帰 (438) and 返 (337)	14. 信 (159) and 任 (339)

Table 10: Kanji in Category B of the Pilot Test

1. 言 (64) and 語 (205)	2. 来 (120) and 時 (25)
3. 事 (38) and 職 (397)	4. 初 (217) and 最 (127)
5. 愛 (241) and 思 (67)	6. 空 (167) and 宙 (956)
7. 使 (158) and 便 (712)	

Table 11: Kanji in Category C of the Pilot Test

1. 水 (88) and 氷 (1036)	2. 雨 (476) and 雲 (857)
3. 食 (213) and 飯 (741)	4. 所 (123) and 席 (319)

3.3 Instructions for the experimental group in the pilot study (English translation)

The sheets distributed to the experimental and control groups both contained the abbreviations: “(adj.)” (adjective), “(adv.)” (adverb), “(n.)” (noun), and “(v.)” (verb). For clarification of the pronunciation of each Kanji, interpoints (·) were inserted between Kanji in Japanese words borrowed from classical Chinese.

The following lists include Kanji with almost identical meanings such as 目 (“eye” as a general word) and 眼 (“eye” as part of words such as 眼鏡 “glasses”), and 見 (“to see” as a general word) and 視 (“to see” as part of words such as 視力 “eyesight, vision”). The main purpose of the presentation of these characters is to raise learners’ consciousness of subtle differences in usage between pairs of Kanji because the understanding of such a distinction may help learners to use the listed vocabulary more accurately. From 25 pairs shown in the instruction sheet of the pilot test, 10 examples are demonstrated in the following sections.

The instructions shown below are English translations of those used in the pilot tests. Additionally, for readers who are not familiar with Malay and Indonesian, some explanations of grammatical changes in them such as those from *s* to *ny* sounds by the addition of a prefix (*sakit* and *penyakit*), were added to the English version. Their original Malay versions are shown in Appendices 1, 2, and 3.

3.3.1 Use of one root in Malay

This group of words comprises Kanji characters which share a common component such as the Kanji 目 (“eye”) and their corresponding Malay words which include a common root such as *mata* (“eye”). Most pairs of the listed Malay words contain a prefix (e.g., *me-*), a suffix (e.g., *-an*), or a combination of a prefix and suffix (e.g., *ke-* and *-an*).

Table A1: *Mata* (“eye”) and *Cermin Mata* (“glasses”) with their Japanese Equivalents

Root: *mata* (“eye”)

mata “eye” (n.)	**目** me
cermin **mata** “glasses” (n.)	**眼鏡** megane

This table demonstrates *mata* (“eye”), *cermin mata* (“glasses”), and their Japanese corresponding words. *Mata* (“eye”) corresponds to the Japanese *me* spelled with **目** or **眼**. In Japanese, **目** is most commonly used and **眼** is usually employed as part of words such as *megane* **眼鏡**. The Malay word *cermin* means “mirror.”

Table A2: *Melihat* (“to see”) and *Penglihatan* (“eyesight, vision”) with their Japanese Equivalents

Root: *lihat* (verb-based root meaning “see”)

me**lihat** “to see” (v.)	**見る** miru
peng**lihat**an “eyesight, vision” (n.)	**視力** shi·ryoku

The Malay word *lihat* is a root that means “see,” and has a holistic meaning similar to that of the Kanji **見** (“to see”). This table consists of *melihat* (“to see”), *penglihatan* (“eyesight, vision”), and their Japanese equivalents. The character **視**, which contains **見** (“to see”), is used as part of words such as ***shi****ryoku* **視力** (“eyesight, vision”) and ***shi****ten* **視点** (“viewpoint”).

Table A3: *Sakit* (“ill, sick, ache, pain”), *Penyakit* (“illness”), and *Kesakitan* (“ache, pain”) with their Japanese Equivalents

Root: *sakit* (“ill, sick, pain, painful”)

pe**nyakit** “illness” (n.) < **sakit**	**病気** byō·ki
ke**sakit**an “ache, pain” (n.)	**痛み** itami

This table presents *sakit* (“ill, sick, illness, ache, pain”), *penyakit* (“illness”) derived from *sakit*, *kesakitan* (“ache, pain”), and their Japanese equivalents *byōki* **病気** (“sick, ill, illness”) and *itami* **痛み** (“ache, pain”). Both **病** and **痛** contain **疒** (*yamai-dare*), which has a basic meaning of illness. The Malay root *sakit* has a basic meaning of “ill,” “sick,” and “painful”. *Sakit* becomes *penyakit* when the prefix *pen-* precedes this word.

Table A4: *Hati* (“heart”) and *Perhatian* (“caution”) with their Japanese Equivalents

Root: *hati* (“heart, gut”)

hati “heart” (n.)	**心** kokoro
per**hati**an “caution” (n.)	**注意** chū·i

This table includes two Malay words *hati* (“heart”) and *perhatian* (“caution”) and two Japanese words, *kokoro* **心** (“heart”), and *chūi* **注意** (“caution”). The shape of **心** (“heart”) comes from that of the internal organ. The Kanji **意** (“mind, thought”) which is the second letter of **注意** contains the radical **心** (“heart”). The upper part of **意** is **音** (“sound”).

3.3.2 Combinations of words of foreign and Malay origins

The focus of this group of words was on the combinations of words of foreign and Malay origins. Therefore, some pairs of corresponding Japanese words did not share a common component. In addition, *kāryālaya* is a Sanskrit and Hindi word which means “office.” The Arabic word *awwal* (“first”) was presented in Table A6 for comparative demonstration together with the Malay/Indonesian word *awal* (“beginning; early”),

which originates from the Arabic word.

Table A5: *Kerja* (“work”) and *Kāryālaya* (“office” in Sanskrit) with their Japanese Equivalents

Utilized foreign word: *kārya* (“work”)

kerja “work” (n.)	**仕事** shigoto
***kāryā**laya* “office, workplace” (n.)	**職場** shoku·ba

The Malay word *kerja* and the Sanskrit word *kāryālaya* (“office”) shown in this table originate from a common Sanskrit verb *kṛ* (“to do”). The etymology of *kerja* (“work”) is the Sanskrit *kārya*. The Malay word *karya* (“artistic works”) also stems from the same Sanskrit word. The literal meaning of the Japanese word *shigoto* (“work”) is “matter which one does.” In other words, both Malay *kerja* and Japanese *shigoto* are originally linked with the act of “doing.”

Table A6: *Awal* (“beginning”) and *Awwal* (“first” in Arabic) with their Japanese Equivalents

Utilized foreign word: *awwal* (“first” in Arabic)

awal “beginning” (n.)	**初め** hajime
awwal “first” (adj.)	**最初の** sai·sho no

This table presents the Malay word *awal* (“beginning, early”), *awwal* (“first” in Arabic), and their Japanese equivalents. The Malay word *awal* comes from the Arabic word.

Table A7: *Langit* (“sky”), *Angkasa* (“space, sky”), and *Ākāśa* (“sky” in Sanskrit) with their Japanese Equivalents

Utilized foreign word: *ākāśa* (“sky” in Sanskrit)

langit “sky” (n.)	**空** sora
angkasa “space, sky” (n.)	**宇宙** u·chū

This table demonstrates *langit* (“sky”) and *angkasa* (“space, sky”). The Malay word *angkasa* originates from the Sanskrit *ākāśa* (“sky”). These words correspond to Japanese words *sora* **空** and *uchū* **宇宙**. These Kanji share the component **宀**.

Table A8: *Menggunakan* (“to use”) and *Berguna* (“useful”) with their Japanese Equivalents

Root: *guna* (“use”)

meng**guna**kan “to use” (v.)	**使う** tsukau
ber**guna** “useful” (adj.)	**便利な** ben·ri na

The Malay root *guna* (“use”) stems from Sanskrit. This table presents the Malay words *menggunakan* (“to use”), *berguna* (“useful”), and their Japanese equivalents. Both **使** and **便** share the same component that originates from the Kanji **人** (“person”).

3.3.3 Combinations of two Malay-origin words

This group of words comprises Kanji characters which share a common component such as **雨** (“rain”) and their corresponding Malay words which include a common root such as *hujan* (“rain”). Most pairs of the listed Malay words include a compound noun based on a common root.

Table A9: *Air* (“water”) and *Air Batu* (“ice”) with their Japanese Equivalents

Root: *air* (“water”)

air “water” (n.)	**水** mizu
air batu “ice” (n.)	**氷** kōri

Malay words in this table are *air* (“water”) and *air batu* (“ice”). 水 (“water”) and 氷 (“ice”) have only one different stroke on the top. The Malay word *batu* means “stone,” and the literal meaning of *air batu* (“ice”) is “stone water.”

Table A10: *Hujan* (“rain”) and *Awan Hujan* (“rain cloud”) with their Japanese Equivalents

Root: *hujan* (“rain”)

hujan “rain” (n.)	**雨** ame
awan **hujan** “rain cloud” (n.)	**雨雲** amagumo

This table presents *hujan* (“rain”), *awan hujan* (“rain cloud”), and their corresponding words. The Kanji 雨 (“rain”) comes from a picture of raindrops and is included in 雲 (“cloud”). These two Japanese words become *amagumo* 雨雲 (“rain cloud”).

3.3.4 Results of the pilot tests

At the beginning of the pilot study, two Malaysian university students (Student 1 and Student 2) were asked to take the first version of the Japanese vocabulary test that consists of 50 questions (cf. Appendix 2). The maximum score was 50. Its English version is shown in the Section 3.3. The time limit for memorization was an hour and that for answering was also an hour.

Table 12: Scores of Participants in the First Version of the Pilot Test

S1	S2	S3	S4
42	38	30	25

After the second trial, 事, 通, 返, 職, 帰, and 過 in the first version of the

vocabulary list were omitted because the participants answered that they were very confusing. Instead, 人, 同, 家, 協, 他, and 宅 were added to the second version (cf. Appendix 3).

Table 13: Scores of Participants in the Second Version of the Pilot Test

S5	S6	S7	S8	S9
29	45	29	30	36

After the sixth trial of the pilot study, 所 and 席 in the second version were omitted. Instead, 火 (366) ("fire") and 焼 (883) ("to burn; bake; grill") were added to the third version (cf. Appendix 4) because the pair of the Kanji 火 and 焼 seemed to have clearer similarity in form than that of 所 and 席.

Table 14: Scores of Participants in the Third Version of the Pilot Test

S10	S11	S12	S13	S14	S15	S16	S17	S18	S19
47	23	28	42	29	23	40	32	29	26

S20	S21	S22	S23	S24	S25
19	19	15	12	33	29

The average score of a total of 11 students who took the second and third versions of the test for the experimental group is 33.81 (total score: 372). The average score of another 11 students who took the third version for the control group is 24.45 points (total score: 269). Based on the results, the author of the present study thinks that the vocabulary list for the experimental group is more beneficial than that for the control group without instructions related to the learner's native language.

After the pilot test, pairs of words which comprised Sanskrit or Arabic words as listed vocabulary were removed because they seemed too difficult for most participants in the pilot test who had almost no previous knowledge of Sanskrit or Arabic. The utilization of the etymologies of Malay words that originate from Sanskrit and Arabic apparently was less useful than the semantic similarities between Malay and Japanese. However, etymologies may help learners who already have previous knowledge regarding the origins of Malay words borrowed from Sanskrit and Arabic.

In addition, even though their Malay equivalents shared a root such as *tempat* ("place"), pairs of Kanji characters that did not share any component (e.g., the characters 所 and 席 whose corresponding Malay words can be *tempat* "place" and *tempat duduk* "seat") were also omitted from the vocabulary used for Test 1.

Pairs of Japanese Kanji such as 使 (shown as part of 使う "to use") and 便 (presented as part of 便利な "useful") shared a radical and their corresponding Malay words *menggunakan* ("to use") and *berguna* ("useful") shared *guna* (root meaning "to use"), but the shared Kanji component was not directly related to the action of using. Therefore, such pairs of words were also excluded from the lists used in the main tests. As a result, most pairs of Kanji used for Tests 1, 2, and 3 shared a Kanji component, and their Malay equivalents included the same Malay root.

3.4 Details of the vocabulary tests and relevant questionnaire surveys

3.4.1 Sequence of the study

After the pilot test, the author administered Test 1 in which two types of similarities (Type 1 and Type 3) were identified. At that time, the idea of categorization of semantic similarities among the selected vocabulary items had not been clearly defined. Japanese words and their Malay equivalents later named Type 2, e.g., 妹 ("younger sister") and 娘 ("daughter") that share the radical 女 ("woman") were introduced in Test 2. In

preparation for this test, the author conducted a questionnaire survey and two interviews with a Malaysian Japanese-language teacher at a secondary school in Pulau Pinang (Penang State). This school teaches Japanese as one of the elective foreign languages. Along with this, an additional questionnaire surveys was administered to nine lecturers teaching Japanese in a special school preparing students for undergraduate studies in Japan.

As a result of the questionnaire surveys and interviews, some characters that were revealed as being too simple were replaced with more complex characters. In the next stage, another questionnaire survey was conducted to provide a detailed analysis of degree of difficulty regarding each of the categories of Kanji (Types 1, 2a, 2b, and 3) proposed by the study. In addition, the questionnaire identified the major elements that encouraged the participants to learn the characters listed in Test 2.

Table 15: Sequence of the Vocabulary Tests and Relevant Questionnaire Surveys

1.	Test 1 (March 20–April 6, 2014)
	↓
2.	1) A questionnaire survey and two interviews involving a Malaysian Japanese-language teacher at a secondary school in Pulau Pinang (January 21 and February 5, 2015) 2) A questionnaire survey administered to nine Japanese-language teachers at the University of Malaya (January 25, 2015)
	↓
3.	Test 2 (March 25–April 8, 2015)
	↓
4.	A questionnaire survey concerning characters listed in Test 2 (November 10–15, 2015)
	↓
5.	Test 3 (November 30–December 7, 2016)

3.4.2 Participants in the vocabulary tests

The participants in Test 1 were 142 Malaysian university students who are native speakers of Malay. All the participants were engineering majors. They were students from eight classes. The author of the study obtained official written permission from a Malaysian university and collected data from the participants. Prior to administrating the tests, the researcher randomized the participants by asking each of them to draw a folded piece of paper from a box which assigned them to either the experimental group (70 participants) or the control group (72 participants). The researcher inquired as to whether the participants had learned Japanese at any institution formally or informally. Those having any prior learning experiences were excluded.

Table 16: Details of Participants in the Vocabulary Tests

	Experimental Group	Control Group	Total Number of Participants
Test 1	70	72	142
Test 2	56	51	107
Test 3	56	60	116

All participants in Tests 2 and 3 were native Malay-speaking students, who specialized in engineering at the same faculty as participants in Test 1.

3.5 Content of Test 1

3.5.1 Procedures of Test 1

The first test of this study (Test 1) included a total of 30 questions (cf. Section 3.5.3). The participants were given 30 minutes for learning the Kanji and another 30 minutes to answer the questions. The written instructions and meanings of the given Japanese words in the lists and the tests for the experimental and control groups were written in Malay. The given characters, vocabulary, and their corresponding Malay words in the

test are identical for both groups. The sheets distributed to the experimental and control groups both contained the abbreviations: “(adj.)” (adjective), “(n.)” (noun), and “(v.)” (verb). For clarification of the pronunciation of each Kanji, interpuncts (·) were inserted between Kanji in Japanese words borrowed from classical Chinese. A vocabulary list without additional instructions was distributed to the control group. It contained the same Japanese words as those for the experimental group, but only presented the spellings and pronunciation of Japanese words, their Malay translations and abbreviations for part of speech. The Japanese characters to be learned were printed in bold.

After the pilot study, **金** (“money” as a general word) and **銭** (“money” usually used as part of a word such as “small change”) were added to the list because the relationship and similarity between these two characters might benefit the participants’ learning of basic Kanji. On the contrary, 32 Kanji that seemed to have less clear similarities were omitted to alleviate the respondents’ learning load.

The participants of Test 1 were a total of 142 Malaysian university students who are native speakers of Malay. All the participants were engineering majors. The author of this study obtained official written permission from a Malaysian university and collected data in eight different classes. Prior to the tests, the administrator of the test randomized the participants by asking them to draw a folded piece of paper from a box which assigned them to either the control group (72 participants) or the experimental group (70 participants). The researcher inquired as to whether the participants had learned Japanese at any institution formally or informally. Those having any prior learning experiences were excluded.

All Kanji characters used as the listed characters and options in the multiple-choice questions in the tests were selected based on previous studies and the results of the pilot test. A major part of the distracters included identical components

(e.g., 飲 "to drink" instead of 飯 "rice, meal"). Other distracters included a component different from the ones constituting the correct answer (e.g., 通 "to pass, to pass by" instead of 痛 "pain") or that had a visual similarity with the correct option (e.g., 大 "big, great" instead of 人 "person").

The experimental group was given a list of 30 Japanese words, the corresponding Malay vocabulary and written instructions in Malay (cf. Appendix 5). The Japanese words were presented as 15 pairs in the list for this group, and each pair included a common radical that usually indicated semantic similarity. Simultaneously, the control group received a list of the same Japanese vocabulary and corresponding Malay words without instructions (cf. Appendix 9). Both the experimental and control groups were given 30 minutes to learn the words and another 30 minutes to answer the same multiple-choice test consisting of 30 questions (cf. Section 3.5.3). Following the test, the number of correct answers by each participant was calculated, and the average scores of the experimental and control groups were analyzed using a *t*-test in Excel. Other statistical analyses were conducted using R version 2.15.2. Multiple linear regression was employed to measure the effect size of treatment. In addition, bootstrapping (1000 Bootstrap replicates) was used to analyze the difference in proportion of correct answers between the experimental and control groups for each type of Kanji. Welch's *t*-test was used to examine the difference in the number of correct answers for Kanji characters that demonstrated the greatest variations between the two groups' percentages of correct answers. The results of Test 1 are demonstrated and analyzed in Section 4.2. To examine the efficacy of the explicit presentation of semantic similarities between Japanese and Malay words and the percentage of the correct answers from the experimental group, a separate analysis is provided in Section 4.2.1. According to Tokuhiro (2008), the highest and lowest-frequency rankings of the selected characters are 7^{th} and $1{,}185^{th}$; respectively, representing most of the top half of

the *Jōyō Kanji*. Based on these rankings, the author of the present study deemed the selected Kanji appropriate for the main test and the revised test of this study.

Table 17: Kanji Characters Listed in Test 1

1. 目 and 眼	2. 見 and 視	3. 病 and 痛
4. 学 and 教	5. 心 and 意	6. 明 and 説
7. 信 and 任	8. 火 and 焼	9. 言 and 語
10. 水 and 氷	11. 雨 and 雲	12. 食 and 飯
13. 家 and 宅	14. 人 and 他	15. 金 and 銭

Table 18: The Characters Taught in Test 1 and Type of Each Character

Type 1: T1 Type 3: T3				
目 (T1)	眼 (T1)	見 (T1)	視 (T1)	病 (T3)
痛 (T3)	学 (T3)	教 (T3)	心 (T1)	意 (T1)
明 (T3)	説 (T3)	信 (T3)	任 (T3)	火 (T1)
焼 (T1)	言 (T1)	語 (T1)	水 (T1)	氷 (T1)
雨 (T1)	雲 (T1)	食 (T1)	飯 (T1)	家 (T3)
宅 (T3)	人 (T1)	他 (T1)	金 (T1)	銭 (T1)

Table 18 demonstrates characters explained in Test 1 and the type of each character, that is, Types 1 and 3. No Type 2 characters were shown in the test. The number of Type 1 and 3 characters was 20 and 10, respectively. Most of the Type 1 characters are pictograms with relatively simple forms, whereas the others of this type, such as 眼, 視, and 意, comprise two components. In contrast, all Type 3 characters used in this test contain two or more Kanji components and are more visually complex than most of the Type 1 characters.

3.5.2 Instructions for Test 1 (English translation)

From 15 pairs shown in the instruction sheet of Test 1, eight examples are demonstrated as follows:

A. Use of one root in Malay

Table B1: *Mata* (“eye”) and *Cermin Mata* (“glasses”) with their Japanese Equivalents

Root: *mata* (“eye”)

mata “eye” (n.)	**目** me
cermin **mata** “glasses” (n.)	**眼鏡** megane

This table demonstrates *mata* (“eye”), *cermin mata* (“glasses”), and their corresponding Japanese words. *Mata* (“eye”) corresponds to the Japanese word *me* that is written with 目 or 眼. The Kanji 目 originates from a picture of an eye. In Japanese, 目 is used more often than 眼. Usually, 眼 appears as part of words such as ***me****gane* 眼鏡 (“glasses”).

Table B2: *Melihat* (“to see”) and *Penglihatan* (“eyesight, vision”) with their Japanese Equivalents

Root: *lihat* (verb-based root meaning “see”)

me**lihat** “to see” (v.)	**見る** **mi**ru
peng**lihat**an “eyesight, vision” (n.)	**視力** **shi**·ryoku

The Kanji 見 in the Japanese word *miru* 見る (“to see”) is included in the character 視 having an almost identical meaning. The latter is used to construct words such as *shiryoku* 視力 (“eyesight, vision”). This combination of characters literally means “power to see” as 力 signifies “power.”

Table B3: *Penyakit* (“illness”) and *Kesakitan* (“ache, pain”) with their Japanese Equivalents

Root: *sakit* (“ill, sick, illness, ache, pain”)

pe**nyakit** “illness” (n.) < **sakit**	**病気　byō**·ki
ke**sakit**an “ache, pain” (n.)	**痛み　ita**mi

This table presents *sakit* (“ill, sick, illness, ache, pain”), *penyakit* (“illness”), *kesakitan* (“ache, pain”), and their corresponding forms in Japanese *byōki* 病気 (“sick, ill, illness”) and *itami* 痛み (“ache, pain”). Both 病 and 痛 comprise 疒 (*yamai-dare* radical), which has the basic meaning of illness. The consonant *s* in *sakit* changes to *ny* after the prefix *pen*- according to its phonetical change.

Table B4: *Hati* (“heart”) and *Perhatian* (“attention”) with their Japanese Equivalents

Root: *hati* (“heart, liver”)

hati “heart” (n.)	**心　kokoro**
per**hati**an “attention” (n.)	**注意**　chū·**i**

This table includes two Malay words *hati* (“heart”) and *perhatian* (“attention”) and two Japanese words *kokoro* 心 (“heart”) and *chūi* 注意 (“attention”). The Kanji 心 stems from a picture of a heart. This is a Chinese-style character based on a picture or *pictogram*. The lower part of 意 (“thought”) is the character 心.

Table B5: *Kebakaran* (“destructive fire”) and *Membakar* (“to burn”) with their Japanese Equivalents

Root: *bakar* (“burn”)

ke**bakar**an “destructive fire” (n.)	**火事　ka**·ji
mem**bakar** “to burn” (v.)	**焼く　ya**ku

This table demonstrates *kebakaran* (“destructive fire”), *membakar* (“to burn”), and their corresponding Japanese words. The Malay root word *bakar* has a basic meaning of “to burn.” The Chinese character 火 means “fire” and originates from a picture of fire. The Kanji 事 means “matter.” The combination of these two characters 火事 means “destructive fire.” The left part of 焼 is 火 (fire).

B. Other types of pairs

Table B6: *Makan* (“to eat”) and *Makan Malam* (“dinner”) with their Japanese Equivalents

Root: *makan* (“eat”)

makan “to eat” (v.)	**食べる　ta**beru
makan malam “dinner” (n.)	**晩ご飯**　ban·go·**han**

The Japanese word meaning “to eat” is 食べる *taberu*. The Kanji 晩 means “evening.” The Chinese character 飯 (“rice, meal”) includes 食 as a radical. The combination 晩ご飯 means “dinner.”

Table B7: *Orang* (“person”) and *Orang Lain* (“other person”) with their Japanese Equivalents

Root: *orang* (“person”)

orang “person” (n.)	**人　　hito**
orang lain “other person” (n.)	**他人　ta**·nin

The left part of Kanji 他 (“other”) in the Japanese word 他人 (“other person”) is the radical 亻, which means “person” (人 as an independent character).

人 (“person”) originates from a picture of a person.

Table B8: *Wang* (“money”) and *Wang Kecil* (“small change, coins”) with their Japanese Equivalents

Root: *wang* (“money”)

wang “money” (n.)	お金 o**kane**
wang kecil “small change, coins” (n.)	小銭 ko·**zeni**

This table presents 金 (*wang* in Malay) (“money”) and 小銭 (*wang kecil* in Malay) (“small change, coins”). The left part of Kanji 銭 originates from Kanji 金. Kanji 小 means “small.”

3.5.3 Questions for Test 1

The questions used in Test 1 of this study are presented below. The total number of questions is 30. The participants were given to 30 minutes to answer the questions.

Directions (English translation)

“(—)” indicates Kanji (Chinese characters) which are not asked.

Please choose and circle a correct answer (a, b, c, or d.)

1. mempercayakan	(　　)せる　makaseru

a. 仁　　b. 使　　c. 信　　d. 任

2. wang kecil	小(　　) kozeni

a. 銭　　b. 浅　　c. 全　　d. 金

3. kebakaran	(　　)事　kaji

a. 炎　　b. 焼　　c. 火　　d. 灯

4. orang	(　　)　hito

a. 池　　b. 人　　c. 大　　d. 他

5. bahasa	(—) (　　)　gengo

a. 語　　b. 説　　c. 言　　d. 話

6. melihat	(　　)る　miru

a. 覚　　b. 現　　c. 見　　d. 目

7. hati	(　　)　kokoro

a. 心　　b. 感　　c. 意　　d. 思

8. kesakitan	(　　)み　itami

a. 返　　b. 痛　　c. 通　　d. 病

9. terang	(　　)るい　akarui

a. 明　　b. 説　　c. 時　　d. 語

10. belajar	(　　)ぶ　manabu

a. 教　　b. 学　　c. 字　　d. 枚

11. percaya	(　　)じる　shinjiru

a. 便　　b. 信　　c. 仁　　d. 任

12. kata	(　　)葉　kotoba

a. 話　　b.　説　　c. 語　　d. 言

13. makan	(　　)べる　taberu

a. 飲　　b. 館　　c. 飯　　d. 食

14. rumah sendiri	自(　　)　jitaku

a. 家　　b. 宙　　c. 宅　　d. 宇

15. hujan	(　　)　ame

a. 雷　　b. 雲　　c. 雪　　d. 雨

16. keterangan	(　　) (—)　setsumei

a. 時　　b. 説　　c. 語　　d. 明

17. mengajar	(　　)える　oshieru

a. 枚　　b. 字　　c. 学　　d. 教

18. mata	(　　)　me

a. 見　　b. 日　　c. 目　　d. 田

19. rumah	(　　)　ie

a. 家　　b. 宅　　c. 宙　　d. 宇

20. wang	お(　　)　okane

a. 金　　b. 浅　　c. 全　　d. 銭

21. air	(　　)　mizu

a. 氷　　b. 水　　c. 木　　d. 本

22. penyakit	(　　)気　byōki

a. 痛　　b. 柄　　c. 病　　d. 通

23. makan malam	晩ご(　　)　bangohan

a. 館　　b. 飯　　c. 飲　　d. 食

24. perhatian	注(　　)　chūi

a. 意　　b. 心　　c. 思　　d. 感

25. orang lain	(　　) (—)　tanin

a. 人　　b. 大　　c. 池　　d. 他

26. awan hujan	(—) (　　)　amagumo

a. 雪　　b. 雨　　c. 雲　　d. 雷

27. cermin mata	(　　)鏡　megane

a. 日　　b. 眼　　c. 明　　d. 目

28. membakar	(　　)く　yaku

a. 焼　　b. 火　　c. 灯　　d. 炎

29. air batu	(　　)　kōri

a. 水　　b. 木　　c. 氷　　d. 本

30. penglihatan	(　　)力　shiryoku

a. 現　　b. 視　　c. 見　　d. 覚

3.6 Questionnaire surveys on the principal difficulties of Kanji for Malay-speaking learners

3.6.1 Interviews with a Malaysian Japanese-language teacher

In Test 1, 10 pairs of Kanji characters were categorized as Type 1 (e.g., 人, 火, 水, 心, and 目); another five pairs were characterized as a type later named Type 3. The results of Test 1 enabled the author to refine the categorization of semantic similarities between Japanese and Malay. Therefore, additional pairs of Japanese words and their Malay equivalents, primarily Type 2 (妹 and 娘) characters and their Malay equivalents *adik perempuan* ("younger sister") and *anak perempuan* ("daughter"), were introduced in Test 2. To determine Kanji characters that could be added to Test 2, the author conducted two interviews with a Japanese-language teacher in a Malaysian secondary school. This secondary school offers Japanese as a compulsory second-foreign-language

subject. The interviewee is one of the authors of Japanese-language textbooks for Malaysian secondary schools; for example, Lee et al. (2013) and Mohd et al. (2014). He is a Malaysian of Chinese origin and completed his undergraduate course in Japanese studies at Tokyo University of Foreign Studies. He has taught Japanese for more than 10 years at several secondary schools in Malaysia. Majority of his students are Malays who had studied neither Japanese nor Mandarin. The main questions and the interviewee's answers are transcribed in Section 4.3.1 (cf. Appendix 14).

3.6.2 Questionnaire survey with Japanese-language teachers in a special preparatory school at the University of Malaya

To reconfirm the appropriateness of the Kanji characters to be added to Test 2, the author of this study conducted a questionnaire survey of nine native Japanese-language teachers instructing at *Ambang Asuhan Jepun* ("Gateway to Japan"), a special preparatory school at the University of Malaya, Malaysia. There the teachers provide lectures to Malay students in the first year of a two-year course.

All respondents had more than five years' experience of teaching Japanese to foreign students, including Malays. The teachers were aware of the principal difficulties faced by Malay-speaking students with respect to Kanji character learning as most students at that school learn Japanese from the beginner level. They are required to learn approximately 1,000 Kanji characters during their two-year studies without any prior exposure to logographic writing systems. It was for this reason that the author of this study chose the native Japanese lecturers as the respondents of the questionnaire.

Most students of this special preparatory school are capable of entering a four-year undergraduate course in a public Japanese university after graduating from this institution. A majority of new students at the institution commence studying Japanese with little or no previous knowledge of the language. Therefore, they start at

the beginner level and attend intensive courses on the Japanese language for five days a week. At the end of the first year, most students reach the intermediate level with an approximate proficiency equivalent to the N3 (lower intermediate) level of the Japanese-Language Proficiency Test (JLPT). The present author did not administer any tests to the school's students because they are not university students and the collected data could not be generalized in broader contexts in Malaysia. In addition, the contents of study of these students are far more concentrated than those of other Japanese courses. The proficiency level that these students need to achieve is far higher than that required of other Malaysian students. The questionnaire comprised 25 questions. The main questions and the interviewee's answers are transcribed in Section 4.3.3 (cf. Appendix 15).

3.7 Details of Test 2

3.7.1 Content of Test 2

After Test 1, which underscored the efficacy of the explicit presentation of similarities for the learning of relatively simple Kanji including 10 or fewer strokes, the author prepared a new Kanji test based on the responses to questionnaire surveys that were introduced in Section 3.6. The Kanji pairs 水 and 氷, 目 and 眼, 雨 and 雲, 任 and 信, 学 and 教, 家 and 宅, 人 and 他, 心 and 意, 食 and 飯, and 説 and 明 were removed because the presentation of these Kanji characters and their Malay equivalents appeared to be less effective as compared with other listed characters. Instead, the Kanji pairs 娘 and 妹, 海 and 洋, 生 and 産, 光 and 輝, 場 and 地, 聞 and 聴, 通 and 過, 結 and 縛, and 叫 and 鳴 were added to Test 2, to help participants learn more complex characters through the presentation of the additional Kanji pairs (cf. Appendices 7 and 10). The main purpose of the presentation of characters in the pairs 娘 and 妹, 海 and 洋, 場 and 地, 結 and 縛, and 叫 and

鳴, all of which contain a common component on the left side, was to encourage the participants in the experimental group to recognize the common Kanji components. The questions of Test 2 are shown in Section 3.7.2.

Among the listed Kanji in Test 2, 火, 生, 金, 言, 語, 見, 妹, and 海 are included in textbooks for Malaysian secondary schools. The test results are demonstrated in Section 4.4. In addition, bootstrapping (1000 Bootstrap replicates) was used to analyze the difference in proportion of correct answers between the experimental and control groups for each type of Kanji. To examine the effectiveness of the explicit demonstration of semantic similarities between Japanese and Malay words, percentages of the correct answers from the experimental group were analyzed in Section 4.4.2.

The main amendments for Test 2 are as follows:

1. Addition of four Type 1 characters (生, 産, 光, and 輝)
2. Addition of two Type 2 characters (娘 and 妹)
3. Addition of 12 Type 3 characters (場, 地, 聞, 聴, 結, 縛, 叫, 鳴, 海, 洋, 通, and 過)

Table 19 shows characters questioned in Test 2 and the type of each character, i.e., Type 1, 2a, or 3. No Type 2b characters were used in the second test.

Table 19: The Characters Taught in Test 2 and Type of Each Character

Type 1: T1 Type 2a: T2a Type 3: T3					
火 (T1)	焼 (T1)	生 (T1)	産 (T1)	光 (T1)	輝 (T1)
見 (T1)	視 (T1)	言 (T1)	語 (T1)	金 (T1)	銭 (T1)
妹 (T2a)	娘 (T2a)	海 (T3)	洋 (T3)	過 (T3)	通 (T3)
病 (T3)	痛 (T3)	叫 (T3)	鳴 (T3)	地 (T3)	場 (T3)
聞 (T3)	聴 (T3)	結 (T3)	縛 (T3)		

The Kanji 生 (Type 1) is a pictogram. Another Type 1 Kanji 光 is a meaning-based character. The other 10 characters are pronunciation-based. Of the 10 easiest characters in Test 1, nine were pictograms. For this reason, most of the newly added characters are pronunciation-based and meaning-based. 海 and 洋 both have nine strokes, and 通 comprises 10 strokes, which denote the border of visual difficulty for elementary school students in Japan. As demonstrated in Appendix 13, 産, 場, 結, 過, 聞, 鳴, 輝, 縛, and 聴 comprise 11 or more strokes.

The highest- and lowest-frequency Kanji among the six additional characters are ranked the 15th (生) and 1,898th (縛), respectively. The third test includes 叫, 娘, 輝, 縛, and 聴, which are not taught in Japanese primary schools but in junior high schools, and aims to emphasize the semantic similarity between Japanese Kanji and their corresponding Malay words by modifying and adding several Kanji.

From nine new pairs shown in the instruction sheet of Test 2 (cf. Appendix 7), seven examples are demonstrated as follows:

Table 20: *Dilahirkan* (“to be born”) and *Melahirkan* (“to give birth”) with their Japanese Equivalents (Type 1)

Root: *lahir* (“birth, be born”)

di**lahir**kan “to be born” (v.)	**生まれる** umareru
me**lahir**kan “to give birth” (v.)	**産む** umu

This table demonstrates *dilahirkan* (“to be born”), *melahirkan* (“to give birth”), and corresponding Japanese words. Both verbs derive from the same root word *lahir* (“birth, be born”). As well as Malay, corresponding Japanese verb *umareru* (“to be born”) is the passive form of *umu* (“to give birth”). 産 (“to give birth”) includes 生 as its radical.

Table 21: *Cahaya* (“light”) and *Bercahaya* (“to shine”) with their Japanese Equivalents (Type 1)

Root: *cahaya* (“light”)

cahaya “light” (n.)	**光** hikari
ber**cahaya** “to shine” (v.)	**輝く** kagayaku

This table demonstrates *cahaya* (“light”), *bercahaya* (“to shine”), and their corresponding Japanese words. **光** (“light”) includes a variant form of **火** (“fire”). **輝** includes **光** as its sign of meaning. Similarly, the Malay word *cahaya* (“light”) is also included in *bercahaya* (“to shine”).

Table 22: *Adik Perempuan* (“younger sister”) and *Anak Perempuan* (“daughter”) with their Japanese Equivalents (Type 2)

Root: *perempuan* (“woman”)

adik **perempuan** “younger sister” (n.)	**妹** imōto
anak **perempuan** “daughter” (n.)	**娘** musume

The left-side component of both Kanji **妹** (“younger sister”) and **娘** (“daughter”) originates from the Kanji **女** (“woman”). Likewise, the word *perempuan* shared in their Malay counterparts also means “woman.”

Table 23: *Tempat* (“place, location”) and *Tempatan* (“local”) with their Japanese Equivalents (Type 3)

Root: *tempat* (“place, location”)

tempat “place, location” (n.)	**場所** basho
tempatan “local” (adj.)	**地元の** jimoto-no

This table demonstrates *tempat* (“place, location”), *tempatan* (“local”), and their corresponding Japanese words. The Kanji 場 (“place”) and 地 (“ground, place”) both contain another Kanji 土 (“ground”). The Malay word *tempat* (“place”) is related to *tempatan* (“local”).

Table 24: *Mendengar* (“to hear”) and *Pendengaran* (“hearing”) with their Japanese Equivalents (Type 3)

Root: *dengar* (“hear”)

men**dengar** “to hear” (v.)	**聞く** kiku
pen**dengar**an “hearing” (n.)	**聴力** chōryoku

This table demonstrates *mendengar* (“to hear”), *pendengaran* (“hearing”), and their corresponding Japanese words. The Kanji 聞 and 聴 both include the Kanji 耳 (“ear”). In this table, 聞 (“to hear”) is used as a part of the Japanese verb *kiku* 聞く, and 聴 is used as part of the word *chōryoku* 聴力 (“hearing”).

Table 25: *Laut* (“sea”) and *Lautan* (“ocean”) with their Japanese Equivalents (Type 3)

Root: *laut* (“sea”)

laut “sea” (n.)	**海** umi
lautan Hindi “ocean” (n.)	**インド洋** Indo yō

This table demonstrates *laut* (“sea”), *lautan Hindi* (“the Indian Ocean”), and their corresponding Japanese words. The Kanji 海 (“sea”) and 洋 (“ocean”) both include the same radical 氵, which has a global meaning of water. The Japanese word *Indo* means “India.” In general, the Kanji 洋 is used as a part of proper nouns such as the example in the table.

Table 26: *Melalui* (“to pass through”) and *Berlalu* (“to pass”) with their Japanese Equivalents (Type 3)

Root: *lalu* (“pass”)

me**lalu**i “to pass through” (v.)	**通る** tōru
ber**lalu** “to pass” (v.)	**過ぎる** sugiru

This table demonstrates *melalui* (“to pass through”), *berlalu* (“to pass”), and their corresponding Japanese words. The characters **通** and **過** share a component that means “to walk.” Similarly, the Malay root *lalu* is included in both of the words *melalui* (“to pass through”) and *berlalu* (“to pass”).

3.7.2 Questions for Test 2

The questions used in Test 2 of this study are presented below. The total number of questions is 28. The participants were given to 30 minutes to answer the questions.

Directions (English translation)

“( )” indicates Kanji (Chinese characters) which are asked.

Please choose and circle a correct answer (a, b, c, or d.)

1. dilahirkan	( )まれる umareru

a. 姓 b. 産 c. 性 d. 生

2. wang kecil	小( ) kozeni

a. 銭 b. 浅 c. 全 d. 金

3. kebakaran	( )事 kaji

a. 炎 b. 焼 c. 火 d. 灯

4. cahaya	( ) hikari

a. 輝　　b. 光　　c. 米　　d. 運

5. perkataan	単( ) tango

a. 語　　b. 言　　c. 計　　d. 訂

6. melihat	( )る miru

a. 覚　　b. 現　　c. 見　　d. 目

7. laut	( ) umi

a. 海　　b. 洋　　c. 河　　d. 池

8. kesakitan	( )み itami

a. 返　　b. 痛　　c. 通　　d. 病

9. terikat	( )られた shibarareta

a. 組　　b. 結　　c. 縛　　d. 紅

10. jeritan	悲( ) himei

a. 叫　　b. 鳴　　c. 叶　　d. 呼

11. melahirkan	( )む umu

a. 姓　　b. 産　　c. 生　　d. 性

12. berkata	( )う iu

a. 計　　b. 語　　c. 訂　　d. 言

13. penglihatan	( )力 shiryoku

a. 現　　b. 視　　c. 見　　d. 覚

14. berlalu	( )ぎる sugiru

a. 延　　b. 通　　c. 過　　d. 廷

15. tempatan	(　)元の　jimoto-no

a. 池　b. 湯　c. 場　d. 地

16. mengikat	(　)ぶ　musubu

a. 紅　b. 結　c. 縛　d. 組

17. anak perempuan	(　)　musume

a. 奴　b. 妹　c. 嫁　d. 娘

18. lautan Hindi	インド(　)　Indo yō

a. 海　b. 河　c. 洋　d. 池

19. mendengar	(　)く　kiku

a. 聞　b. 間　c. 問　d. 開

20. wang	お(　)　okane

a. 金　b. 浅　c. 全　d. 銭

21. menjerit	(　)ぶ　sakebu

a. 叫　b. 鳴　c. 叶　d. 呼

22. penyakit	(　)気　byōki

a. 痛　b. 柄　c. 病　d. 通

23. tempat	(　)所　basho

a. 場　b. 池　c. 地　d. 湯

24. bercahaya	(　)く　kagayaku

a. 米　b. 運　c. 輝　d. 光

25. melalui	(　)る　tōru

a. 廷　b. 過　c. 延　d. 通

26. pendengaran	(　　)力　chōryoku

a. 恥　　b. 聴　　c. 職　　d. 聞

27. adik perempuan	(　　)　imōto

a. 娘　　b. 奴　　c. 妹　　d. 嫁

28. membakar	(　　)く　yaku

a. 焼　　b. 火　　c. 灯　　d. 炎

3.8 Questionnaire survey of Malay university students regarding Test 2

3.8.1 Participants in the questionnaire survey

After Test 2, several problems were revealed, such as the degree of difficulty for each type of Kanji categorized by the study. To clarify these issues, the author prepared a questionnaire (cf. Appendices 16 and 17) to collect data from approximately 50 participants who were studying in the same department as those involved in Test 2, since he had been informed that the university would be unable to provide him with the opportunity to conduct interviews. The questionnaire survey option turned out to be advantageous because it enabled the author to collect quantitative data and more objectively analyze respondents' opinions regarding the degree of difficulty posed by each category of Kanji.

Sixty Malay students from four classes participated in the questionnaire survey. They were students from the same faculty as those who had taken part in the vocabulary tests in the study. The questionnaire survey was conducted approximately six months after Test 2, and the participants were not asked to write their names but were instructed to indicate only their gender. Some of the students had taken part in the previous vocabulary tests.

3.8.2 Materials

The questionnaire comprised 40 questions about the listed Kanji in Test 2 (cf. Appendices 16 and 17). The main objective of this questionnaire survey was to specify those features of Kanji shown in Test 2 that helped the participants to learn the characters.

In addition, the researcher aimed to answer the following questions:

1. Did the participants gain a better understanding of the importance of their mother tongue through the learning of Japanese?

2. Did the forms of Kanji characters listed in the instruction sheet of Test 2 and the written instructions in Malay concerning the characters, help participants to understand their meanings?

3. Did pairs of Kanji, which were demonstrated together in the Kanji test, facilitate the participant's learning of Chinese characters such as the Kanji 輝 and 視, which comprise many strokes?

4. Did the Kanji characters, which initially interested participants, foster their learning of the relevant characters? Was the same benefit observed even in the case of characters comprising many strokes such as the Kanji 娘?

3.9 Details of Test 3

3.9.1 Content of Test 3

For Test 3, the final refinement of the test development process, the author added the characters 魚, 漁, 瞳, 眼, 鉄, and 鋼, which contain 11 or more strokes, and explored

the efficacy of demonstrating the three types of Kanji characters in a more balanced proportion (cf. Appendix 8).

The two main reasons for administering Test 3 are as follows:

1. To encourage participants in the experimental group to learn the three types of Kanji characters
2. To facilitate the learning of complex characters with 10 or more strokes (e.g., 鋼, 娘, 輝, 痛, 漁, 聞, 魚, and 語)

The main improvements for Test 3 are as follows:

1. Addition of two Type 1 characters (魚 and 漁)
2. Addition of two type 2 characters (瞳 and 眼) (labeled as Type 2b)
3. Addition of two Type 3 characters (鉄 and 鋼)

The Kanji pairs 金 and 銭, 叫 and 鳴, and 結 and 縛 were removed because the presentation of these Kanji characters and their Malay equivalents appeared to be less effective as compared with other listed characters. Instead, the pairs 魚 and 漁, 瞳 and 眼, and 鉄 and 鋼 were added to Test 3, to help participants learn more complex characters through the presentation of the additional Kanji pairs. The characters 魚 and 漁 are categorized as Type 1 in which the simpler character in a pair usually includes fewer than 10 strokes. However, 魚 that was added to Test 3 contains 11 strokes and another character in the pair (漁) includes 14 strokes.

In addition, 目 (“eye”) that was used in Tests 1 and 2 was replaced with 瞳 (“pupil of the eye”) that contains 目 as its radical. Another character 眼 (“eye”) that has been shown as being a part of the Japanese word 眼鏡 *megane* (“glasses”) was

shown in Test 3. The compound word 眼鏡 (“glasses”) consists of 眼 (“eye”) and 鏡 (“mirror”) and has a different structure from other Type 2 characters 妹 (“younger sister”) and 娘 (“daughter”). Therefore, in Test 3, the pair of characters 瞳 (“pupil of the eye”) and 眼 (“eye”) were categorized as Type 2b, while the characters 妹 (“younger sister”) and 娘 (“daughter”) were labeled as Type 2a.

金 (“money”) and 銭 (“money, coin”) that were used in Tests 1 and 2 were replaced with the characters 鉄 (“iron”) and 鋼 (“steel”) that share 金 (“metal” in this context) as their radical. The added Japanese words and their Malay equivalents were demonstrated in the following English translation of written instructions for additional vocabularies in Test 3. The test results are demonstrated in Section 4.6. The vocabulary instructions for the experimental group and the vocabulary material for the control group are shown in Appendices 8 and 11, respectively. The questions of Test 3 are shown in Section 3.9.2.

Table 27: *Ikan* (“fish”) and *Perikanan* (“fishery”) with their Japanese Equivalents (Type 1)

Root: *ikan* (“fish”)

ikan “fish” (n.)	**魚** sakana
per**ikan**an “fishery” (n.)	**漁業** gyogyō

The character 魚 (“fish”) originates from a picture of a fish. Both the characters 魚 (“fish”) and 漁 (part of “fishery”) include the character 魚 (“fish”) and are related to meaning of the Malay words *ikan* (“fish”) and *perikanan* (“fishery”). The component 氵 in the character 漁 means “water.”

Table 28: *Anak Mata* (“pupil of the eye”) and *Cermin Mata* (“glasses”) with their Japanese Equivalents (Type 2)

Root: *mata* (“eye”)

anak **mata** “pupil of the eye” (n.)	**瞳** hitomi
cermin **mata** “glasses” (n.)	**眼鏡** megane

The left part of the two Kanji characters 瞳 (“pupil of the eye”) and 眼 (“eye”) is the Kanji 目 (“eye”). The combination of the characters 眼 (“eye”) and 鏡 (“mirror”) forms 眼鏡 (“glasses”). Its Malay equivalent *cermin mata* includes *mata* (“eye”) and *cermin* (“mirror”).

Table 29: *Besi* (“iron”) and *Besi Waja* (“steel”) with their Japanese Equivalents (Type 3)

Root: *besi* (“iron”)

besi “iron” (n.)	**鉄** tetsu
besi waja “steel” (n.)	**鋼** hagane

The left part of the two Kanji characters 鉄 (“iron”) and 鋼 (“steel”) is the component 金 (“metal”).

Table 30 demonstrates characters used in Test 3 and the type of each character, i.e., Type 1, 2a, 2b, or 3. The number of Type 1, 2a, 2b, and 3 characters is 12, 2, 2, and 12, respectively.

Table 30: The Characters Taught in Test 3 and Type of Each Character

Type 1: T1 Type 2a: T2a Type 2b: T2b Type 3: T3					
火 (T1)	焼 (T1)	生 (T1)	産 (T1)	光 (T1)	輝 (T1)

見 (T1)	視 (T1)	言 (T1)	語 (T1)	魚 (T1)	漁 (T1)
妹 (T2a)	娘 (T2a)	瞳 (T2b)	眼 (T2b)	海 (T3)	洋 (T3)
病 (T3)	痛 (T3)	過 (T3)	通 (T3)	地 (T3)	場 (T3)
聞 (T3)	聴 (T3)	鉄 (T3)	鋼 (T3)		

3.9.2 Questions for Test 3

The questions used in Test 3 of this study are presented below. The total number of questions is 28. The participants were given to 30 minutes to answer the questions.

Directions (English translation)

"( )" indicates characters which are asked.

Please choose and circle a correct answer (a, b, c, or d.)

1. dilahirkan	( )まれる umareru

a. 姓　b. 産　c. 性　d. 生

2. perikanan	( )業　gyogyō

a. 泣　b. 魚　c. 漁　d. 点

3. kebakaran	( )事　kaji

a. 炎　b. 焼　c. 火　d. 灯

4. cahaya	( )　hikari

a. 輝　b. 光　c. 米　d. 運

5. perkataan	単( )　tango

a. 語　b. 言　c. 計　d. 舌

6. melihat	( )る　miru

a. 覚　b. 現　c. 見　d. 視

7. laut	(　　) umi

a. 海　b. 洋　c. 河　d. 沖

8. kesakitan	(　　)み itami

a. 返　b. 痛　c. 本　d. 病

9. besi waja	(　　) hagane

a. 釣　b. 鉄　c. 針　d. 鋼

10. anak mata	(　　) hitomi

a. 明　b. 眼　c. 瞳　d. 暗

11. melahirkan	(　　)む umu

a. 姓　b. 産　c. 生　d. 性

12. berkata	(　　)う iu

a. 計　b. 語　c. 舌　d. 言

13. penglihatan	(　　)力 shiryoku

a. 現　b. 視　c. 見　d. 覚

14. berlalu	(　　)ぎる sugiru

a. 延　b. 通　c. 過　d. 廷

15. tempatan	(　　)元の jimoto-no

a. 池　b. 湯　c. 場　d. 地

16. ikan	(　　) sakana

a. 漁　b. 魚　c. 点　d. 泣

17. anak perempuan	(　　) musume

a. 奴　b. 妹　c. 嫁　d. 娘

18. lautan Hindi	インド(　　) Indo yō

a. 海　b. 河　c. 洋　d. 沖

19. mendengar	(　　)く　kiku

a. 聞　b. 間　c. 問　d. 開

20. cermin mata	(　　)鏡　megane

a. 明　b. 瞳　c. 暗　d. 眼

21. besi	(　　)　tetsu

a. 鋼　b. 鉄　c. 針　d. 釣

22. penyakit	(　　)気　byōki

a. 痛　b. 返　c. 本　d. 病

23. tempat	(　　)所　basho

a. 場　b. 池　c. 地　d. 湯

24. bercahaya	(　　)く　kagayaku

a. 米　b. 運　c. 輝　d. 光

25. melalui	(　　)る　tōru

a. 廷　b. 過　c. 延　d. 通

26. pendengaran	(　　)力　chōryoku

a. 恥　b. 聴　c. 職　d. 聞

27. adik perempuan	(　　)　imōto

a. 娘　b. 奴　c. 妹　d. 嫁

28. membakar	(　　)く　yaku

a. 焼　b. 火　c. 灯　d. 炎

CHAPTER 4: DATA ANALYSIS AND DISCUSSION

4.1 Data analysis and discussion

Section 4.2 presents the results of Test 1. Section 4.3 describes two questionnaire surveys for determining the content of Test 2. Section 4.4 demonstrates the results of Test 2. Section 4.5 presents the observations on a questionnaire survey regarding Test 2. Section 4.6 shows the results of Test 3.

4.2 Results of Test 1

4.2.1 Scores of the experimental and control groups

Table 31 demonstrates the total and mean scores, the number of participants in the experimental and control groups of the first test, along with related statistical data.

Table 31: Total Scores for the Experimental and Control Groups in Test 1

	Experimental Group	Control Group
Group Total	1,237	981
Mean Scores	17.42 (maximum: 30)	13.62
Number of Participants	70	72
p-Value	< 0.001	
t-Value	5.350 (> 1.978)	
Df	140	

In total, the mean scores of the experimental and control groups were 17.42 and 13.62, respectively (n = 142). At a 5% significance level, a significant difference was found between the scores of the two groups ($p < 0.001$). These results suggest that providing written vocabulary instructions in Malay to native Malay-speaking learners can benefit their learning of Kanji, especially those comprised of approximately 10 strokes.

Table 32 shows the 12 Kanji characters in Test 1, on which the maximum differences in performance between the two groups were observed.

Table 32: The 12 Characters Which Demonstrated the Maximum Differences in the Number of Correct Answers between the Two Groups (Test 1)

(* Significant to 0.05, ** Significant to 0.01, *** Significant to 0.001)

Kanji	Experimental Group (n = 70)	Control Group (n = 72)	t-test Results
言	52 (74.2%)	28 (38.9%)	t = 4.5263, df = 139.101, p < 0.001***
見	53 (75.7%)	31 (43.0%)	t = 4.1753, df = 138.186, p < 0.001***
眼	45 (64.3%)	25 (34.7%)	t = 3.6613, df = 139.829, p < 0.001***
食	47 (67.1%)	28 (38.9%)	t = 3.4925, df = 139.99, p < 0.001***
信	45 (64.3%)	26 (36.1%)	t = 3.4742, df = 139.904, p < 0.001***
痛	43 (61.4%)	24 (33.3%)	t = 3.4678, df = 139.488, p < 0.001***
銭	36 (51.4%)	20 (27.8%)	t = 2.9458, df = 137.399, p < 0.001***
学	47 (67.1%)	33 (45.8%)	t = 2.6045, df = 139.87, p < 0.01**
病	37 (52.8%)	23 (31.9%)	t = 2.56, df = 138.705, p < 0.05*
心	63 (90.0%)	50 (69.4%)	t = 3.1373, df = 122.49, p < 0.001***
説	37 (52.8%)	25 (34.7%)	t = 2.1986, df = 139.199, p < 0.05*
金	45 (64.3%)	33 (45.8%)	t = 2.2337, df = 139.985, p < 0.05*

Table 32 demonstrates the following 12 characters from Test 1, showing the maximum differences in scores between the experimental and control groups: 言, 見, 眼, 食, 信, 痛, 銭, 学, 病, 心, 説, and 金. Among these, Type 1 characters were 心, 言, 見, 金, 食, 眼, 銭, and 説; no Type 2 characters were included; and 学, 信, 痛, and 病 were Type 3 characters.

In particular, clear differences between the percentages of correct answers for the

two groups were observed for 言, 見, 眼, 食, 信, and 痛. Approximately 75% of the experimental group participants and 40% of the control group participants accurately recognized 言 and 見. The Kanji 食 and 信 were selected correctly by 67% and 64%, respectively, of the former group and by approximately 39% and 36%, respectively, of the latter group.

The presentation method proposed in this study appeared to assist the experimental group in learning 学, categorized as a Type 3 character, as 67% of the group correctly comprehended its meaning. Positive effects of this method were also observed on the experimental group's answers on the following Type 3 characters: 信, 痛, and 病. Slightly over 64% of the experimental group accurately selected the correct meaning of 信, but the percentage of correct answers of the control group remained at 36.1%. Further, 61.4% of the experimental group participants successfully selected the correct meaning of 痛; however, only 33.3% of the control group could recognize the character correctly. In addition, 病 and 説, which only a third of the control group learned successfully, were correctly identified by 52.8% of the experimental group. 銭 was the least correctly identified character by the control group; only 27.8% selected the right answer. In contrast, the experimental group achieved 51.4%. 心 was successfully identified by 90% of the experimental group, whereas around 70% of the control group accurately recognized its meaning.

4.2.2 Numbers of participants who chose correct answers in Test 1

Table 33 demonstrates the numbers of correct answers for each question in Test 1.

The results of the first test indicate that 目, 心, 人, 雨, 氷, 明, 水, 見, 学, 言, and 金 appeared to be the easiest to learn for the test participants (cf. Table 33). On the other hand, 語, 意, 宅, 飯, 銭, 雲, 教, 他, and 病 were the most difficult. The 11 most correctly identified Kanji comprised eight or fewer strokes, and the Kanji 家, 食, 信, and 眼, which were slightly more confusing to participants, included nine or more strokes. These results may indicate a hypothetical threshold of difficulty for Malay-speaking students, who are not usually familiar with Chinese characters. In other words, most Kanji comprising eight or fewer strokes may be far easier to identify for the majority of participants when compared with the other listed characters. The least correctly identified characters in Test 1 were primarily those demonstrated as a more complex Kanji in each pair in the vocabulary list. Since Test 1 participants were not accustomed to the visual density of Chinese characters comprising numerous strokes, the use of simpler Kanji characters may have prevented participants from focusing on the details of the more complex characters in the pairs of selected words.

Table 33: Numbers of Correct Answers for Each Question in Test 1 (n = 142)

(T1: Type 1, T2: Type 2, T3: Type 3)

Question Number	Numbers of Correct Answers from Respondents for Each Character
1 (任 T3)	63
2 (銭 T1)	56 (fifth-lowest)
3 (火 T1)	78
4 (人 T1)	113 (second-highest)
5 (語 T1)	38 (lowest)
6 (見 T1)	84 (eighth-highest)

7 (心 T1)	113 (second-highest)
8 (痛 T3)	67
9 (明 T3)	91 (sixth-highest)
10 (学 T3)	80 (ninth-highest)
11 (信 T3)	71
12 (言 T1)	80 (ninth-highest)
13 (食 T1)	75
14 (宅 T3)	50 (third-lowest)
15 (雨 T1)	109 (fourth-highest)
16 (説 T3)	62
17 (教 T3)	58 (seventh-lowest 1)
18 (目 T1)	123 (highest)
19 (家 T1)	78
20 (金 T1)	78 (eleventh-highest)
21 (水 T1)	87 (seventh-highest)
22 (病 T3)	60 (ninth-lowest)
23 (飯 T1)	50 (third-lowest)
24 (意 T1)	48 (second-lowest)
25 (他 T1)	58 (seventh-lowest 2)
26 (雲 T1)	57 (sixth-lowest)
27 (眼 T1)	70
28 (焼 T1)	62
29 (氷 T1)	98 (fifth-highest)
30 (視 T1)	61

Eight of the 11 most correctly identified characters—目, 心, 人, 雨, 氷, 水, 見, and 金—are pictograms. As they originate from pictures of an object or a person, they were easier for the participants to visualize and learn. Furthermore, three other easy Kanji—明, 学, and 言—comprise two or more different elements of meaning, such as 日

(“sun”) and 月 (“moon”) in the Kanji 明 (“bright”), to give an overall meaning (*Kaii* characters), and these were more correctly identified than the pictograms 金 (79 correct answers or approximately 55% of the total participants), and 火 (78 correct answers or approximately 54% of the total participants). Drawing from Shirakawa’s research, these results may indicate that an explicit presentation of pairs of visually similar Kanji enabled more than half of the participants to recognize several Kanji that are visually more complex than pictograms. Some of the least often correctly identified Kanji, 語, 宅, 飯, 視, 雲, 他, and 病, are categorized as *Keisei* characters that include an element pertaining to their pronunciation. They have more complicated forms than the aforementioned simple pictograms; therefore, it may be more difficult for participants to learn these Kanji. Moreover, 意 and 教 comprise 10 or more strokes and both have more complex forms than the most frequently recognized characters. Both 他 and 宅, comprising only five strokes, are not difficult to learn; however, participants who could not identify these correctly may have been unaware of the difference; for example, between 他 (“other” suggested as part of “other person”) and 人 (“person” as a general word), as well as that of between 宅 (“house” as in “one’s own house”) and 家 (“house” as a general word). Most participants seemed to focus more on the pair’s simpler character than the complex one.

Among the 11 most correctly recognized characters, pictograms are categorized as Type 1. The characters 言 (part of “to say”) and 語 (“word, language”), which were presented as a pair, are Type 1 characters. No Type 2 characters were used in Test 1. The Kanji 学 (“to learn”) and 教 (“to teach”), demonstrated as a pair, are Type 3 characters, and share the component 子, which means “child” as an independent character. Among the least correctly recognized characters, 病 (“ill, sick, illness”) was presented with the Kanji 痛 (“pain”) as an example of Type 3 characters with a

non-dependent radical. While 60 out of 143 respondents (approximately 42% of the total respondents) correctly identified the meaning of 病, the Kanji 痛 received 67 correct answers from close to half of the total number of participants (47%). In addition, the characters 任 ("to entrust") and 信 (part of 信じる "to believe, trust") were correctly identified by 64 and 71 of the total participants respectively. These Kanji characters are also included in Type 3 as the shared component (亻) cannot be used as an independent Kanji. On the contrary, the Type 3 Kanji 教, comprising 11 strokes, was correctly selected by only 58 participants and was one of the least-correctly identified Kanji. The *yamai-dare* radical (疒) shared in the Type 3 characters 病 and 痛 may have helped participants to learn these Kanji more than the component 子, included in the Type 3 characters 学 and 教.

One of the major difficulties for the respondents in Test 1 may have been the frequent appearance of the radical 言 in 言, 語, 説, and 信. In addition, the shared components (心 in 意, 宀 in 宅, 雨 in 雲, and 子 in 教) appeared to be more difficult to recognize compared with characters that include components on the left or right side.

Table 34: The 11 Most-Frequently Recognized Kanji in Test 1 with the Associated Kanji of Each Pair

Rankings	Most-Frequently Identified Kanji and their Listed Meanings	Meaning of the Associated Kanji of Each Pair
1.	目 eye	glasses (眼)
2.	心 heart	attention (意)
3.	人 person	other person (他)
4.	雨 rain	rain cloud (雲)

5.	氷 ice	water (水)
6.	明 bright	explanation; clarification (説)
7.	水 water	ice (氷)
8.	見 to see	eyesight (視)
9.	学 to learn	to teach (教)
10.	言 to say	language (語)
11.	金 money	small change (銭)

Table 34 shows the 11 most-frequently recognized characters in Test 1 with the associated Kanji of each pair. Five out of the 11 most-frequently recognized characters share their counterpart Kanji, 意, 他, 雲, 教, and 語, with the least-frequently identified Kanji. This may indicate that most participants focused on the simpler Kanji in these pairs but paid less time and attention to the more complex characters. Such respondents may have perceived a clear difference in the number of strokes and degree of visual difficulty between the simpler and more complex Kanji.

In contrast, the three characters 目, 明, and 見 in the easiest group of the Test 1, correctly identified by 124, 92, and 85 of the 143 participants, respectively, evidently helped most of them to recognize the counterpart Kanji characters 眼, 説, and 視, recognized by 71, 62, and 62 participants, respectively.

4.3 Results of questionnaire surveys

4.3.1 Answers of a Malaysian Japanese-language teacher in the interviews

This section demonstrates answers by a Malaysian Japanese-language teacher from the interviews described in Section 3.6.1 (cf. Appendix 14). In the first question of the interview to the Malaysian Japanese-language teacher, he was asked whether the teaching of Japanese Kanji in Malaysian secondary schools had restrictions particularly for Malaysia. He answered that in Malaysian textbooks for secondary schools; only one

pronunciation was shown for each Kanji to reduce confusion. He said that most Japanese-language exams in secondary schools consisted only of multiple-choice questions; so, students had very few opportunities to write and read Kanji in the class and during exams. However, the interviewee also pointed out at the increasing importance of writing and reading proficiency in Kanji by stating that the latest SPM (*Sijil Pelajaran Malaysia* [Malaysian Certificate of Education])—the examinations for Malaysian high school students who intend to enter university—comprised several questions in which students were asked to write Kanji and reproduce the pronunciation of several Kanji using phonetic characters. Therefore, writing and reading proficiency in Kanji is going to become more and more important for secondary school students.

Questions 2, 3, and 4 of the interview focused on the relationship between the degree of difficulty of Kanji and the number of component strokes. The interviewee answered all the questions, and agreed to the interviewer's view that there were different degrees of difficulty among Kanji with less than 10 strokes (e.g., 見 and 食), 10–14 strokes (e.g., 意 and 聞), and more than 14 strokes (e.g., 聴 and 輝).

In Question 5, he was asked whether it was generally difficult for the majority of Malay beginners of Japanese to notice the common component shared by two or more Kanji without an explicit presentation by the teacher. In response to this, he stated that in Malaysian secondary schools, components of Chinese characters are usually not explicitly presented or explained although the explicit presentation of a shared component of Kanji among several characters would be helpful. Only several Kanji, which include a common component, are taught throughout the five academic years of Malaysian secondary education.

In addition, the interviewee agreed with all statements in Questions 12 through 21, related to the explicit presentation of semantic similarities between Malay and Japanese Kanji. However, he stated that it was desirable to provide Malay translations for the

listed Kanji presented in Questions 17 through 21 as these characters would be less difficult for learners than those presented in Questions 13 through 16. Several statements related to the questions in the survey are given below.

Question 12. The explicit presentation of a Kanji with approximately 10 strokes and with another similar Kanji, comprising 10–19 strokes, as a pair can help Malay beginners learn Japanese.

Question 13. The explicit presentation of the Malay words *adik* ***perempuan*** ("younger sister") and *anak* ***perempuan*** ("daughter"), which share the root ***perempuan*** ("woman"), and their corresponding Japanese Kanji 妹 and 娘, sharing the component 女, is beneficial for Malay beginners of Japanese.

In answer, he replied that the explicit presentation of the shared components could benefit Malay beginners of Japanese. This type of presentation would be more helpful for intermediate students wishing to revise the learnt Kanji because, compared with isolated memorization, the categorization and consciousness-raising on the shared components would help them remember the Kanji more easily."

The statements in Questions 14, 15, and 16 were almost identical to that of Question 13. The pairs of Kanji presented in these questions were, 見 and 視, 光 and 輝, and 言 and 語, respectively.

The interviewee also agreed with the statements in Questions 17 through 21, which have an identical structure and relate the pairs of Kanji 生 and 産, 聞 and 聴, 場 and 地, 海 and 洋, and 通 and 過, respectively. The interviewee commented as follows regarding these questions.

The lists in Questions 17–21 seem more difficult for Malay beginners compared with those in Questions 13–16; however, if additional written explanations in Malay were provided regarding the shared components, such explicit presentation would also be helpful. In addition, this method could be beneficial for autonomous learning at any location without the help of a teacher. The readiness, interest, and motivation of students were vital to the teaching of the Japanese vocabulary. If the students were not ready or interested in particular Kanji characters, they would not be inclined to learn them.

The author interviewed the same teacher again by presenting him with the complete vocabulary list for Test 2. The main comments were as follows:

Malaysian primary school students, especially Malay students, frequently learn derivatives of Malay roots, such as *lihat* (root meaning "see"), *melihat* ("to see"), and *penglihatan* ("eyesight," "vision") from the first to third year. Therefore, the use of Malay root words and the presentation of similarities between Malay and Japanese would be very beneficial. Moreover, he stated that the provision of additional instructions in the learners' first language would be very helpful for a deeper understanding of word meanings. The learners who use the vocabulary lists related to this study would be able to retain the vocabulary better than those learners using isolated memorization for learning. In particular, this vocabulary-instruction method may suit learners at university who intend to study Japanese for a long time because these students usually need to utilize similarities in shared radicals to facilitate their learning. They could also try to categorize similar characters by themselves as part of their autonomous learning outside class.

The interviewee's answers and comments supported the effectiveness of the presentation method and the complementary instructions for Test 2.

4.3.2 Results of a questionnaire survey with Japanese-language teachers

A questionnaire, administered to Japanese-language teachers at *Ambang Asuhan Jepun* special preparatory school was described in Section 3.6.2 (cf. Appendix 15). It comprised 25 questions. Questions 1 through 9 focused on the difficulty level of Kanji for Japanese-language beginners, who are native Malay speakers with almost no previous knowledge of Kanji characters.

Question 1 of the survey included the following statement:

"The existence of *On-yomi* (Chinese-origin pronunciations) and *Kun-yomi* (original Japanese pronunciations) in most Japanese Kanji is the main difficulty for native Malay-speaking beginners in Japanese."

Six out of nine respondents agreed or strongly agreed with this statement, and the other three selected "neutral." The complexity in terms of pronunciation can be one of the principal difficulties of Kanji characters for Malay speakers.

The statement in Question 2 was as follows:

"Kanji characters, which indicate three syllables or more (e.g., *utsuku-* in *utsuku·shii* "beautiful"; *muzuka-* in *muzuka·shii* "difficult") were especially difficult for native Malay-speaking beginners of Japanese."

Only two respondents agreed with the statement and four disagreed. In addition, another three participants expressed a neutral opinion. It may indicate that this phonetic aspect concerning multiple syllables covered by a Kanji may not cause crucial problems to Malay-speaking learners.

Questions 3 and 4 respectively included statements regarding the difficulty of

Kanji comprised of 10 strokes or more (e.g., 意 and 聞) and 15 strokes or more (e.g., 聴 and 輝). Three respondents agreed to, and five chose "neutral" for the statement in Question 3, while only one respondent disagreed. In contrast, three respondents strongly agreed and two agreed with the statement in Question 4, recognizing the difficulty of Kanji comprised of approximately 15 strokes. Another four respondents selected "neutral."

The statement in Question 5 was as follows:

"For most Malay-speaking learners of Japanese, it is difficult to spontaneously recognize common components shared in multiple Kanji (e.g., the component 火 shared in the characters 火 and 焼)."

Six respondents disagreed and two agreed. Another participant took a neutral position. Their responses indicate that many Malay-speaking learners are able to recognize shared components in groups or pairs of Kanji and they may be able to utilize materials for self-study which explicitly demonstrate common Kanji radicals. However, it is also possible that respondents may have incorrectly assumed that first-year students of the special preparatory school are typical Japanese beginners.

Question 6 focused on the difficulty of many Kanji (e.g., 過, 怖, and 腕) included in the vocabulary at the N2 (higher intermediate) and N3 (lower intermediate) levels of the JLPT for Malay-speaking beginners. Four teachers expressed neutral opinions, while two agreed and three disagreed.

Question 7 stated, "The number of strokes included in the taught Kanji characters is a more important contributing factor to the difficulty of Kanji for learners than differences in levels of the JLPT." Each of the options "Agree," "Neutral," and "Disagree" were chosen by an exactly identical proportion of respondents. Therefore, the degree of difficulty of Kanji characters, as perceived by learners, cannot be predicted by only the number of strokes. In addition to the two factors abovementioned,

differences in visual aspects, such as symmetrical and asymmetrical forms of the taught characters, may affect the learners' perception of difficulty.

Questions 8 and 9 concerned the semantic or phonetic irregularity of common components shared in some groups of similar Kanji.

The statement in Question 8 was as follows:

"One of the principal difficulties of Kanji is that characters such as 取 ("to take") and 得 ("to get, obtain") concern actions using hands but do not regularly comprise any component related to a hand such as the *te-hen* radical, which stems from a Kanji meaning 'hand'."

Only one respondent agreed with the statement in this question and three expressed neutral opinions. However, another five participants disagreed. Such absence in regularity of particular Kanji components did not appear to be an obstacle to the learning of Japanese by most Malay speakers.

Question 9 comprised the following statement:

"One of the primary difficulties of Kanji is that characters such as 徳 (pronounced *toku*) and 聴 (pronounced *chō*) share a common component but do not have similar pronunciations."

Seven respondents agreed with the statement in this question and another two took a neutral position. Their responses to the statements in Questions 8 and 9 suggest that a phonetic irregularity regarding components commonly included in some Kanji may inhibit the learning more than semantic irregularity.

Question 10 included the following sentence:

"Kanji characters included in technical terms concerning mathematics and subjects related to natural science were mainly taught by teachers of the relevant subjects."

Seven respondents expressed their agreement. One participant chose "neutral," with the comment, "It depends on the characters." In addition, another teacher disagreed

with the statement. Despite the disagreement from a participant, the other respondents affirmed that characters used in everyday or general communication were taught in Japanese-language classes, and specialized characters with more strokes were taught in the relevant specialized classes.

Questions 12 through 14 concerned characters which cannot be taught in the preparatory school classes because of time or curriculum restrictions. Questions 15 and 16 were related to characters which could be taught if the order of strokes need not be learned at the same time. The participants' responses to these six questions varied almost equally in each option of the Likert-scale, and no obvious tendency was observed.

This preparatory school uses the second edition of *Minna-no Nihongo* textbook series for beginner level I (Three A Network, 2012) for first-year students. In addition, Oyanagi (2002) and Oyanagi (2003), part of the *New Approach* textbook series, have also been used as the main teaching materials. As teaching time is not sufficient to finish these three textbooks within a year, only part of Oyanagi (2002), oriented to intermediate and advanced learners, is taught in first-year classes, and the other part is taught in second-year classes. Oyanagi (2003), a textbook for beginners of Japanese as a foreign language, demonstrates the characters 与 ("to give"), 甘 ("sweet"), 辛 ("spicy"), and 扱 ("to deal with"), which are not taught in elementary schools but in junior high schools in Japan (pp. 5, 126, 157, 213). It seems that characters which comprise fewer than 10 strokes are not so difficult for learners of Japanese as a foreign language. This fact may be proof that the criteria for the teaching of Kanji in Japanese elementary and junior high schools do not relate to the criteria for the teaching of Kanji in courses of Japanese as a foreign language.

As the complimentary textbooks for the teaching of Kanji, the preparatory school uses KCP Gakuen (2011a), KCP Gakuen (2011b), KCP Gakuen (2012a), and KCP

Gakuen (2012b). The first two books contain 555 basic Kanji for beginners, and the others present another 500 Kanji for intermediate learners.

One respondent did not answer Questions 17 through 25. Therefore, the total number of valid answers for these questions is eight. Seven respondents agreed with Question 17: “The explicit presentation of several Kanji, sharing a common part of character to indicate clearly their formal and semantic similarity, is beneficial for Japanese-language beginners who are native speakers of Malay.” Five respondents affirmed the benefit of presenting Kanji comprising approximately 10 strokes and some Kanji comprising between 10 and 19 strokes. As presented below, seven respondents out of eight agreed or strongly agreed with Questions 19 through 25. Among these questions, the agreement was the highest (50%) for Question 19 regarding the benefits of an explicit presentation of the characters 妹 (“younger sister”) and 娘 (“daughter”), which share the radical 女, and their Malay equivalents *adik perempuan* (“younger sister”) and *anak perempuan* (“daughter”), which share the word *perempuan* (“woman; female”). The question was as follows.

Question 19. The explicit presentation of the Malay words *adik perempuan* (“younger sister”) and *anak perempuan* (“daughter”), sharing the root word *perempuan* (“woman; female”), and the corresponding Japanese words and Kanji characters 妹 (“younger sister”) and 娘 (“daughter”), which share a common component 女 (“woman”), clearly indicating semantic similarities, is beneficial for Malay-speaking beginners in Japanese.

adik <u>perempuan</u>	妹 imōto
anak <u>perempuan</u>	娘 musume

The respondents’ answers: Strongly agree (4 respondents); Agree (3 respondents); Neutral (1 respondent); Disagree (none); Strongly disagree (none)

Even though the characters 視, 聞, 聴, and 輝 contain more than 10 strokes and their detailed forms appear to be difficult for Japanese-language beginners to learn and recognize, the same number of respondents agreed or strongly agreed with Question 20 on the Kanji 見 and 視, with Question 22 on the Kanji 聞 and 聴, and with Question 23 on the Kanji 光 and 輝.

Question 20. The explicit presentation of the Malay words *melihat* (“to see”) and *penglihatan* (“eyesight, vision”), sharing the root word *lihat* (“see”), and the corresponding Japanese words and Kanji characters 見る (“to see”) and 視力 (“eyesight, vision”), which share a common component 見 (“to see”), clearly indicating semantic similarities, is beneficial for Malay-speaking beginners in Japanese.

melihat	**見る** miru
penglihatan	**視力** shiryoku

The respondents’ answers: Strongly agree (1 respondent); Agree (6 respondents); Neutral (1 respondent); Disagree (none); Strongly disagree (none)

Question 21. The explicit presentation of the Malay words *dilahirkan* (“to be born”) and *melahirkan* (“to give birth”), sharing the root word *lahir* (“be born”), and the corresponding Japanese words and Kanji characters 生まれる (“to be born”) and 産む (“to give birth”), which share a common component 生 (“to be born; to live”), clearly indicating semantic similarities, is beneficial for Malay-speaking beginners in Japanese.

dilahirkan	**生**まれる umareru
melahirkan	**産**む umu

The respondents' answers: Strongly agree (1 respondent); Agree (4 respondents); Neutral (3 respondents); Disagree (none); Strongly disagree (none)

Question 22. The explicit presentation of the Malay words *mendengar* ("to hear; to listen") and *pendengaran* ("hearing"), sharing the root word *dengar* ("hear; listen"), and the corresponding Japanese words and Kanji characters 聞く ("to hear") and 聴力 ("hearing"), which share a common component 耳 ("ear"), clearly indicating semantic similarities, is beneficial for Malay-speaking beginners in Japanese.

men<u>dengar</u>	**聞く** kiku
pen<u>dengar</u>an	**聴力** chōryoku

The respondents' answers: Strongly agree (1 respondent); Agree (6 respondents); Neutral (1 respondent); Disagree (none); Strongly disagree (none)

Question 23. The explicit presentation of the Malay words *cahaya* ("light") and *bercahaya* ("to shine"), sharing the root word *cahaya* ("light"), and the corresponding Japanese words and Kanji characters 光 ("light") and 輝く ("to shine"), which share a common component 光 ("light"), clearly indicating semantic similarities, is beneficial for Malay-speaking beginners in Japanese.

<u>cahaya</u>	**光** hikari
ber<u>cahaya</u>	**輝く** kagayaku

The respondents' answers: Strongly agree (1 respondent); Agree (6 respondents); Neutral (1 respondent); Disagree (none); Strongly disagree (none)

Question 24. The explicit presentation of the Malay words *tempat* ("place; location") and *tempatan* ("local"), sharing the root word *tempat* ("place; location"), and the corresponding Japanese words and Kanji characters 場所 ("place; location") and 地元

の (“local”), which share a common component 土 (“ground”), clearly indicating semantic similarities, is beneficial for Malay-speaking beginners in Japanese.

tempat	**場所** basho
tempatan	**地元の** jimoto-no

The respondents’ answers: Strongly agree (2 respondents); Agree (4 respondents); Neutral (1 respondent); Disagree (1 respondent); Strongly disagree (none)

Question 25. The explicit presentation of the Malay words *laut* (“sea”) and *lautan* (“ocean”), sharing the root word *laut* (“sea”), and the corresponding Japanese words and Kanji characters 海 (“sea”) and ...洋 (“ocean”), which share a common component 氵 (“water”), clearly indicating semantic similarities, is beneficial for Malay-speaking beginners in Japanese.

laut	**海** umi
lautan Hindi	**インド洋** Indo yō

The respondents’ answers: Strongly agree (2 respondents); Agree (4 respondents); Neutral (1 respondent); Disagree (none); Strongly disagree (1 respondent)

Table 35 demonstrates the number of participants, the mean of their responses to each of the Questions 19–25, and the standard deviation for each question. In the questionnaire, five and four points were allotted to “Strongly agree” and “Agree,” respectively. The means of responses for Questions 19, 20, 22, and 23 exceeded 4.00 points (out of 5.00). The means for Questions 21, 24, and 25 also exceeded 3.75 points, approaching 4.00. The results indicate that most participants agreed with all the questions between Questions 19 and 25.

Table 35: The Number of Participants, Means of their Responses to Questions 19–25, and Standard Deviation

	Number of Participants	Mean (maximum = 5)	Standard Deviation
Question 19	8	4.38	±0.744
Question 20	8	4.00	±0.535
Question 21	8	3.75	±0.707
Question 22	8	4.00	±0.535
Question 23	8	4.00	±0.535
Question 24	8	3.88	±0.991
Question 25	8	3.75	±1.282

One respondent disagreed with the statement in Question 24, and another respondent strongly disagreed with the statement in Question 25. Since Japanese-language teachers in the Ambang Asuhan Jepun preparatory school usually teach Japanese to students in only Japanese, some of the respondents may not be interested in the value of the explicit presentation of semantic similarities between Malay and Japanese Kanji. If such institutions utilized the learners' first language in classes and for autonomous learning outside the class, the curriculum would encourage students to learn Japanese in more active ways and enhance their motivation and interest in learning Kanji and vocabulary.

The respondents' answers and comments may suggest that visual and semantic similarities between several Kanji sharing a common component can be a more important factor for the facilitation of Kanji learning than the number of strokes. The results of the three aforementioned surveys were the primary criteria for the choice of the Malay words and Japanese Kanji presented in Test 3.

4.4 Results of Test 2

4.4.1 Detailed results of Test 2

Table 36: Details of Results of Test 2 (n = 107)

	Experimental Group	Control Group
Group Total	980	640
Mean Scores	17.5 (maximum: 28)	12.5
SD	4.29	3.02
Number of Participants	56	51
p-Value	< 0.001	
t-Value	6.893 (> 1.983)	
DF	105	

Table 36 demonstrates the detailed results of the Test 2. In total, the average scores of the experimental and control groups were 17.5 and 12.5, respectively (n = 107). At a 5% significance level, a significant difference was found between the scores of the two groups ($p < 0.001$). Multiple linear regression indicates that the experimental group had an effect size of 4.99 more correct answers than the control group (df = 106, $R^2 = 0.305$, $p < 0.001$). This shows that the use of the presentation method enabled an improvement of 4.99 points, i.e., 17.8% in the scores of the experimental group. Figure 5 demonstrates the mean and standard deviation of the experimental and control groups in Test 2.

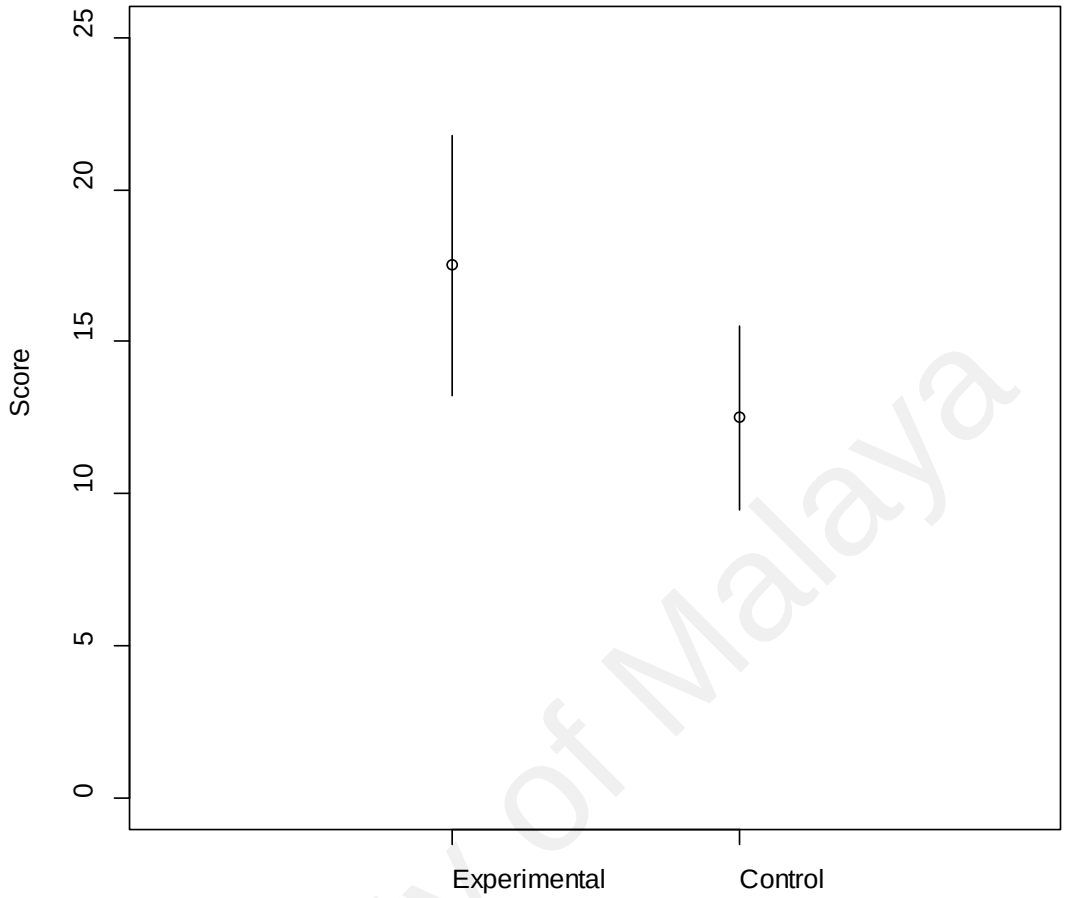

Figure 5: Mean and Standard Deviation of the Experimental and Control Groups (Test 2)

Figure 6 demonstrates the Bootstrapped means and 95% confidence intervals for the proportion of correct answers regarding Types 1, 2, and 3 Kanji characters (1000 Bootstrap replicates). In this method, overlaps in the 95% confidence intervals indicate no significant difference between the means. Statistically significant differences were found between Types 1 and 3 and between Types 2 and 3; however, no significant difference was observed between Types 1 and 2. The analysis of variance (ANOVA) was not employed to analyze the data because the factors (Kanji types) in the test were not independent, that is, each participant's score for each factor was not statistically independent.

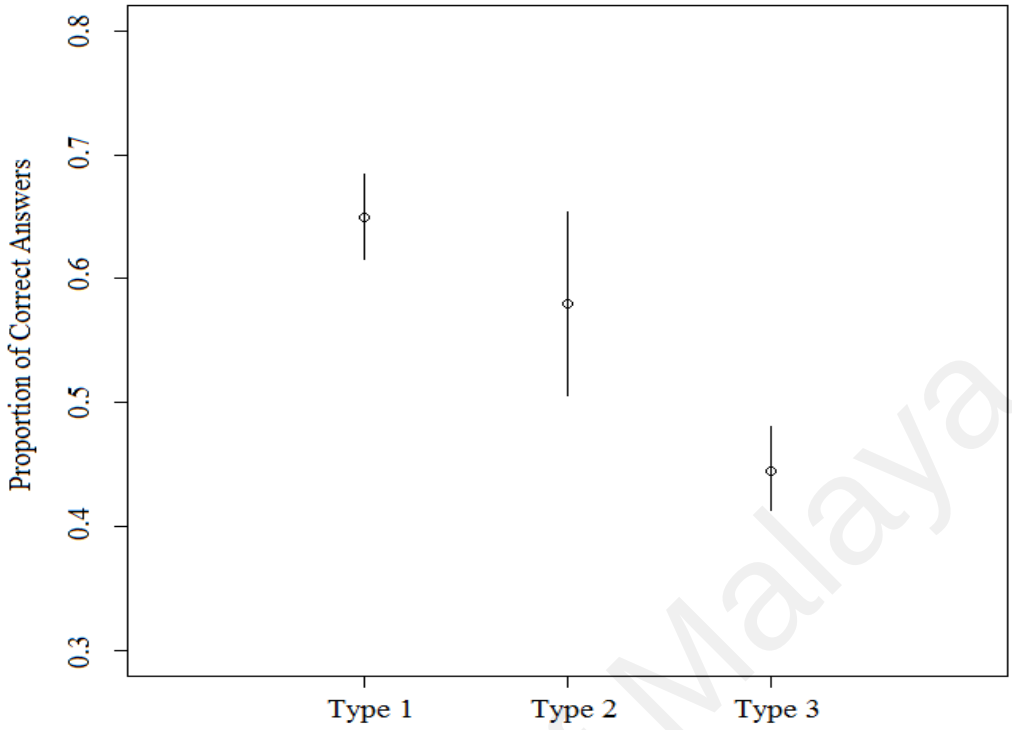

Figure 6: Bootstrapped Means and the 95% Confidence Intervals for Proportion of Correct Answers regarding Types 1, 2, and 3 Kanji Characters

4.4.2 Numbers of participants who chose correct answers in Test 2

Table 37 demonstrates the numbers of correct answers for each question in Test 2. The results of Test 2 indicate that 光, 言, 金, 火, 生, 輝, 見, 視, 妹, 痛, and 娘 were the easiest to learn for participants in Test 2. The 10 most difficult Kanji characters for the test participants were 縛, 地, 過, 産, 場, 聴, 叫, 病, 洋, and 鳴. Characters including 10 or more strokes, such as the Kanji 輝 (15 strokes), 痛 (12 strokes), 視 (11 strokes), and 娘 (10 strokes) are included in the 11 most correctly identified Kanji.

Table 37: Numbers of Correct Answers for Each Question in Test 2 (n = 107)

(T1: Type 1, T2: Type 2, T3: Type 3)

Question Number	Numbers of Correct Answers from Respondents for Each Character
1 (生 T1)	78 (fifth most-correctly identified)
2 (銭 T1)	60
3 (火 T1)	79 (fourth most-correctly identified)
4 (光 T1)	87 (most-correctly identified)
5 (語 T1)	56
6 (見 T1)	73 (sixth most-correctly identified)
7 (海 T3)	57
8 (痛 T3)	61 (tenth most-correctly identified)
9 (縛 T3)	31 (least-correctly identified)
10 (鳴 T3)	53 (tenth least-correctly identified)
11 (産 T1)	40 (fourth least-correctly identified)
12 (言 T1)	85 (second most-correctly identified)
13 (視 T1)	66 (eighth most-correctly identified)
14 (過 T3)	37 (third least-correctly identified)
15 (地 T3)	36 (second least-correctly identified)
16 (結 T3)	59
17 (娘 T2)	61 (tenth most-correctly identified)
18 (洋 T3)	52 (ninth least-correctly identified)
19 (聞 T3)	58
20 (金 T1)	82 (third most-correctly identified)
21 (叫 T3)	43 (seventh least-correctly identified)
22 (病 T3)	51 (eighth least-correctly identified)
23 (場 T3)	40 (fourth least-correctly identified)
24 (輝 T1)	73 (sixth most-correctly identified)
25 (通 T3)	56
26 (聴 T3)	41 (sixth least-correctly identified)

27 (妹 T2)	63 (ninth most-correctly identified)
28 (焼 T1)	59

Almost half of the 56 participants of the experimental group practiced writing 輝 ("to shine") and 光 ("light") on the instruction sheet before the test as these characters were presented as a pair of characters with similar meanings. Characters such as 光, 輝, 見, 視, and 痛 were often practiced by participants of the experimental group although they were not required to write Kanji in the test. However, this writing practice may have helped participants to learn both characters as a pair of characters. The character 妹 ("younger sister") seemed to interest many participants and was often practiced together with another listed Kanji 娘 ("daughter"), which share the same component. In addition, 妹 ("younger sister") indicates that the comparative presentation of cross-linguistic similarities proposed in this study fostered learning of these characters, although they may have been difficult for most participants to learn. The 10th most correctly identified Kanji 痛 includes the *yamai-dare* radical, which occupies the left and upper sides of the character and seems more difficult to recognize than radicals located either on the left or right side of the character. Despite this difficulty, 61 participants (approximately 57%) recognized this character. However, 病, which shares the same radical, is included in the nine least correctly identified Kanji. This demonstrates the difficulty of a radical covering two sides of a character.

Several Kanji consisting of less than nine strokes, such as 地 (six strokes), 叫 (six strokes), and 洋 (nine strokes), are included in the nine least correctly identified Kanji. The result implies that even characters that consist of less than 10 strokes were sometimes confusing for many Malay-speaking students who were not familiar with Kanji characters.

The Kanji 叫 (43 correct answers or approximately 40%) was presented with 鳴 (53 correct answers or approximately 50%) in the same pair. Although the former includes fewer strokes, it obtained less correct answers. The component 鳥 on the right side of 鳴, which comes from a picture of a bird and could be used as an independent Kanji, may have been easier for participants to recognize than the shared component 口. 叶 and 呼, which were shown as other options in the questions on 叫 and 鳴, may have confused participants. It would be necessary to carefully present Kanji such as 鳴 and 場, whose shared component is visually simpler (e.g., 口 and 土) than the other part of the character, which appears to draw learners' attention more than the shared part.

Table 38 demonstrates the 13 characters from Test 2, which showed the maximum differences in scores between the experimental and control groups: 輝, 銭, 娘, 妹, 通, 場, 焼, 痛, 産, 光, 見, 病, and 叫. Among these, Type 1 characters included 輝, 銭, 焼, 産, 光, and 見. Type 2 characters were 妹 and 娘 (labeled as Type 2a). Type 3 characters were 場, 叫, 通, 痛, and 病. More than 50% of the experimental group participants correctly recognized these 13 characters, and the smallest difference between the percentages of correct responses from the two groups was 21.8% for 見. Statistically significant differences were found between the proportions of correct answers from the two groups for all the 13 characters. The results may justify the opinion of Koda (2005a), who supported explicit vocabulary learning and the use of first-language equivalent words for second language acquisition.

Table 38: The 13 Characters Which Demonstrated the Maximum Differences in the Number of Correct Answers between the Two Groups (Test 2)

(* Significant to 0.05, ** Significant to 0.01, *** Significant to 0.001)

(T1: Type 1, T2: Type 2, T3: Type 3)

Kanji	Experimental Group (n = 56)	Control Group (n = 51)	t-test Results
輝 (T1)	49 (87.5%)	24 (47.0%)	t = 4.8436, df = 85.495, p < 0.001***
銭 (T1)	42 (75.0%)	18 (35.3%)	t = 4.4458, df = 101.227, p < 0.001***
娘 (T2)	42 (75.0%)	19 (37.2%)	t = 4.198, df = 100.787, p < 0.001***
妹 (T2)	45 (66.1%)	18 (35.3%)	t = 5.2253, df = 97.559, p < 0.001***
通 (T3)	37 (75.0%)	19 (37.2%)	t = 3.0804, df = 103.6, p < 0.01**
場 (T3)	31 (55.3%)	9 (17.6%)	t = 4.3838, df = 102.151, p < 0.001***
焼 (T1)	40 (71.4%)	19 (37.2%)	t = 3.7318, df = 102.288, p < 0.001***
痛 (T3)	39 (69.6%)	22 (43.1%)	t = 2.8336, df = 102.079, p < 0.01**
産 (T1)	28 (50.0%)	12 (23.5%)	t = 2.9332, df = 104.506, p < 0.01**
光 (T1)	51 (91.1%)	36 (70.6%)	t = 2.7297, df = 82.443, p < 0.01**
見 (T1)	44 (78.6%)	29 (56.8%)	t = 2.4321, df = 97.394, p < 0.05*
病 (T3)	33 (58.9%)	18 (35.3%)	t = 2.4957, df = 104.54, p < 0.05*
叫 (T3)	29 (51.8%)	14 (27.4%)	t = 2.6359, df = 104.967, p < 0.01**

In particular, clear differences (more than 30%) between the numbers of correct answers from the two groups were observed for 輝, 銭, 娘, 妹, 通, 場, and 焼. The high percentage of correct responses from the experimental group would affirm the suggestion of Mori (2014), who pointed out a close association between the improvement in learners' Kanji processing skills and the increase in the comprehension of visual and semantic features of Kanji characters. Approximately 66% of the the experimental group participants correctly answered questions on 妹 (Type 2), whereas only 35.3% of the control group participants successfully identified this character. The

character 輝 (Type 1) was correctly understood by 87.5% of the experimental group; however, the percentage of correct answers from the control group was 47%. Both the Kanji 銭 (Type 1) and 娘 (Type 2) were correctly defined by 75% of the former group, but by only 35% of the latter group. The Kanji 焼 (Type 1) was correctly recognized by 71.4% of the experimental group, whereas the proportion of correct answers from the control group reached only 37%. More than 90% of the experimental group gained a comprehension of the character 光 (Type 1), whereas the proportion for the control group remained at 70.6%. A similar difference in the percentages of correct recognition was observed in the Kanji 見 (Type 1), which was accurately selected by 78.6% and 56.8% of the experimental and control groups, respectively.

For 産 (Type 1), the percentage of correct answers from the experimental group was 50.0% but for the control group, the figure was below 25%. Similar to the indication of Test 1, the method of explicitly presenting similarities between Japanese and Malay words appeared to assist the experimental group in the learning of Type 3 characters with independent radicals, such as the Kanji 場 and 叫. Approximately 55% and 51% of the experimental group selected the correct answers compared with 17% and 27% of the control group. In addition, the comparative demonstration provided to the experimental group encouraged the majority of them to learn Type 3 characters with dependent radicals, such as 通 (75.0%), 痛 (69.6%), and 病 (58.9%), whereas the proportions of correct answers given by the control group were 37.2%, 43.1%, and 35.3%, respectively.

Table 39: The 13 Most-Frequently Recognized Kanji in Test 2 and the Associated Kanji in Each Pair

Rankings	Most-Frequently Identified Kanji and their Listed Meanings	Meaning of the Associated Kanji in Each Pair
1.	光 light	to shine (輝)
2.	言 to say	word (語)
3.	金 money	small change (銭)
4.	火 fire	to burn (焼)
5.	生 to be born	to give birth (産)
6.	輝 to shine	light (光)
7.	見 to see	eyesight (視)
8.	視 eyesight	to see (見)
9.	妹 younger sister	daughter (娘)
10.	痛 pain, painful	sick, ill, illness (病)
11.	娘 daughter	younger sister (妹)
12.	銭 small change	money (金)
13.	結 to tie	to be bound (縛)

Table 39 shows the 13 most-frequently recognized characters in Test 2 and the associated Kanji in each pair. Only two out of the 10 most-frequently recognized characters share their counterpart Kanji, i.e., 産 and 病, with the least-frequently identified Kanji. One of the primary reasons may be that the listed characters in each pair in Test 2 have less difference in the numbers of strokes and degree of visual complexity than those used for Test 1. A majority of Test 2 participants could focus on both the simpler and more complex Kanji in most pairs. Among Type 3 characters that appeared to be the most difficult among the four categories, the Kanji 結 comprising 12 strokes was more frequently recognized than other Kanji in the same category, such as 叫 and 地, which comprise only six strokes. These two Kanji and their counterpart

characters (鳴 and 場) were included in the least-frequently recognized Kanji. This may well indicate that the radical 糸 shared in 結 and its counterpart Kanji (縛) are more useful for learning than the very simple 口 and 土 components, which can be less conspicuous than the other component in the character.

The Malay *dilahirkan* (from the root *lahir*) and *penglihatan* (from the root *lihat*) demonstrated as first-language equivalents to the listed Japanese words 生まれる ("to be born") and 視力 ("eyesight"), respectively, include a combination of a prefix and a suffix; however, this Malay structure did not cause many participants to make errors. For learners, single words, including those with two affixes, might be more beneficial than compound words such as *orang lain* ("other person"), which has a reverse word order.

4.5 Results of a questionnaire survey regarding Test 2

4.5.1 Observations on the questionnaire survey regarding Test 2

At the beginning of the questionnaire survey regarding Kanji characters used in Test 2, the respondents, consisting of 60 native Malay-speaking students, received the vocabulary instruction sheet that had been provided for the experimental group in Test 2 and were given 30 minutes to read it (cf. Appendix 7). Next, the questionnaire, which included a 5-option Likert-scale from "Strongly agree" to "Strongly disagree," was administered (cf. Appendices 16 and 17). The time limit for completing the questionnaire was 40 minutes.

Question 1 of the questionnaire included the following statement:

"The Malay language used in the Kanji test enabled me to understand the importance of my mother tongue in the learning of Japanese."

Forty-five out of 60 respondents (75%) agreed or strongly agreed with the statement in Question 1, mentioning that using their first language for written instructions in the vocabulary test benefited them in learning the listed Kanji. In addition, 42 respondents (70%) agreed with Question 3 “Kanji characters that comprise 15 strokes or more are difficult to learn.” According to the answers to Question 2, only 27 respondents (approximately 45%) commented that Kanji comprising approximately 10 strokes were difficult for them to learn.

Question 4 of the questionnaire included the following statement:

“The form of the Kanji 輝 and the written instructions on the character in Malay in the Kanji test previously administered, helped me to understand the meaning of the character, i.e., ‘to shine.’”

According to the answers to Questions 4 through 8, more than 42 participants (approximately 70% of the total respondents) affirmed that the forms and visual characteristics of 輝 (Type 1), 視 (Type 1), 妹 (Type 2), 娘 (Type 2), and 痛 (Type 3), presented along with written instructions on their meanings and components, helped them to learn the characters. Although these characters seemed relatively difficult for respondents, the visual features and instructions in their first language encouraged them to learn the characters.

Question 9 of the questionnaire included the following statement:

“The Kanji 光 (“light”) and 輝 (part of “to shine”), which were demonstrated together in the Kanji test, facilitated the learning of Chinese characters that comprise many strokes such as 輝.”

More than 40 respondents (approximately 67%) agreed or strongly agreed with Questions 9, 10, 18, 20, or 21 regarding the benefits of an explicit presentation of pairs of similar characters: 光 and 輝, 見 and 視, 火 and 焼, 言 and 語, and 金 and 銭, respectively. These Kanji are categorized as Type 1. A simpler Kanji in each pair might have facilitated the learning of the other characters, which comprise 10 or more strokes. Similarly, 39 and 41 respondents (approximately 65% and 67%, respectively) agreed with Questions 23 and 27, respectively, recognizing that an explicit presentation of the similar pairs 洋 and 海 (Type 3) and 通 and 過 (also Type 3) helped them learn these characters.

Forty-one respondents (approximately 67%) agreed with Question 11 regarding the efficacy of the comparative presentation of the pair 妹 and 娘 (Type 2).

Question 12 of the questionnaire included the following statement:
"Kanji characters that were interesting to me encouraged me to learn the relevant characters such as 妹 ("younger sister")."

Forty-four respondents (approximately 73%) agreed with both Questions 12 about 妹 and 13 about 娘 ("daughter"), recognizing that their interest had helped them learn these characters. In addition, 43 respondents agreed with Question 15 that 視 (part of "eyesight") had encouraged their learning.

De Groot (2006) discusses degrees of difficulty among foreign-language vocabulary items and points out that the extent to which learners are able to imagine a concept (called "imageability") is closely related to learnability. De Groot emphasizes that words with strong emotional connections frequently accelerate visualization and vocabulary learning. Positive and negative meanings of several Kanji characters

positively affected respondents' learning. Thirty-eight respondents (approximately 63%) answered Questions 14 and 17 positively, recognizing that their interest in the forms and meaning of 輝 ("to shine") and 痛 ("pain") facilitated their learning of the characters despite their visual complexity. Question 16, concerning interest in 焼 ("to burn"), received agreement or strong agreement from 35 respondents (approximately 60%).

Thirty-seven respondents (approximately 62%) agreed with Questions 19 and 28 regarding the usefulness of explicitly demonstrating two pairs of Kanji: 生 and 産 (Type 1) and 地 and 場 (Type 3). These pairs were created to facilitate learning of visually complex characters in the pair (産 and 場). Although the number of respondents in agreement was very limited, 35 participants (approximately 58%) expressed their agreement or strong agreement with Question 24, admitting the benefits of explicitly demonstrating the pair 叫 and 鳴 (Type 3). The presentation of the visually simple character 叫 accelerated the learning of the more complex character 鳴. Questions 25 and 26 regarding presentation of the Type 3 Kanji pairs 縛 and 結 and 聴 and 聞, received agreement only from 30 and 29 students (approximately 50% of the total for both), respectively. Thus, the learners' impression of the visual complexity of each Kanji can influence the learning process.

Questions 29 through 37 included statements concerning differences in the degree of learnability between two specific Kanji. Forty-three respondents (approximately 72%) agreed with both Questions 29 and 30, which stated that 視 (Type 1) would be easier to learn than 娘 (Type 2) and 場 (Type 3) because the first one includes several straight strokes. Forty-six respondents (approximately 77%) similarly found 視 (Type 1) easier to learn than 結 (Type 3). Furthermore, 48 and 45 respondents considered 視 to be easier than Type 3 characters 海 and 痛.

Regarding Questions 36 and 37, 37 and 42 respondents (approximately 62% and

70%) respectively expressed their agreement, recognizing that 聞 (Type 3) was easier to learn than 産 (Type 1) and 聴 (Type 3). One of the main reasons for their responses may be that the character 聞 has a simpler, almost symmetrical form, thus making it easier for them to recognize it as compared with the other two characters.

The statement in Question 38 received agreement or strong agreement from 45 respondents (75%) who considered Kanji characters containing right- and left-side components. Kanji characters, such as 視 and 結, were considered to be more difficult compared to those containing upper- and lower-side parts, such as 家 and 雲. In answering Question 39, 36 respondents (60%) agreed that Kanji with a component covering the left and upper sides, such as 病, were more difficult to learn than those comprising the right- and left-side components. Since the latter seemed moderately difficult to learn, 鉄 (“iron”), 鋼 (“steel”), 眼 (“eye”), 瞳 (“pupil of the eye”), and 漁 (“to fish”; part of “fishery”) having this type of structure, were selected for Test 3. This test was created and refined according to the participants’ responses to this survey.

In addition, Question 40 of the questionnaire included the following statement: “Kanji that include a component covering the right-, left-, and upper-sides, such as 聞, are more difficult to learn than those that include a component consisting only of the right and left sides.”

This question received agreement or strong agreement from 39 respondents (65%). The Kanji 聞 seemed relatively easy for participants to learn; however, in general, characters with a component covering three sides may be more difficult to recognize.

4.5.2 Summary of the results of the questionnaire survey

The summary of the results on the main four topics is as follows:

1. The participants' answers to Question 1 suggested that approximately 75% of the total respondents recognized that they had gained better understanding of the importance of their first language by learning Japanese Kanji. Additionally, the participants became more aware of semantic similarities between Malay and Japanese by comparing selected pairs of words provided in the questionnaire survey. Despite differences in derivation systems and word structures between Malay and Japanese, most participants have discovered possible ways to learn a broader range of Kanji characters by utilizing their first-language vocabulary knowledge.

2. Regarding the positive effect from the forms of characters and written instructions in Malay on the relevant characters in the instruction sheet, more than 70% of the respondents expressed their agreement with statements concerning 輝 (Type 1), 視 (Type 1), 妹 (Type 2), 娘 (Type 2), and 痛 (Type 3). For example, written instructions for components such as 光 ("light") in the character 輝 ("to shine") or 見 ("to see") in the character 視 (part of 視力 "eyesight") encouraged learners to understand semantic connections between the component conveying a holistic meaning and the whole character. Furthermore, these instructions helped learners recognize complex characters as a combination of several components.

3. More than 40 respondents affirmed that an explicit presentation of the similar pairs of characters 光 and 輝, 見 and 視, 火 and 焼, 言 and 語, and 金 and 銭 encouraged them to learn these Kanji, which were all categorized as Type 1. Additionally, a question regarding the comparative demonstration of the pair of

characters 妹 and 娘 (Type 2) also received the response of “agree” or “strongly agree” from 41 respondents. Approximately 40 respondents recognized the usefulness of the presentation of pairs of characters categorized as Type 3, such as 洋, 海, 通, and 過. The characters 縛, 結, 聴, and 聞, also categorized as Type 3, only received approximately 30 positive answers.

However, 37 and 42 respondents (approximately 62% and 70%) respectively affirmed that 聞 (Type 3) was easier to learn than 産 (Type 1) and 聴 (Type 3). Their answers offered a valuable implication concerning visual difficulty levels of Kanji characters. The indicated order of the easy and difficult types of Kanji for the participants in the questionnaire survey matched the order identified by the respondents in Test 2, i.e., Types 1, 2, and 3. The almost symmetrical form of the character 聞 encouraged participants to learn it, therefore, suggesting that even beginners may not face considerable difficulty when recognizing and learning characters if they are accustomed to the characteristics of their forms and strokes.

The participants’ answers became useful criteria for the selection of Kanji characters used in Test 3, in particular, the almost symmetrical Kanji 魚 (“fish”) and another Kanji 漁 (“to fish”; part of 漁業 “fishery”) containing the former as a component.

4. Among 妹 (“younger sister”), 娘 (“daughter”), 輝 (“to shine”), 視 (part of 視力 “eyesight”; “to see”), 焼 (“to burn”), and 痛 (“pain; painful”), 妹, 娘, and 視 helped the participants to learn the ideograms because more than 40 of the 60 respondents expressed their agreement with the relevant questions. The characters 妹 (“younger sister”), 娘 (“daughter”), and 視 (part of 視力 “eyesight”; “to see”) were closely connected to the everyday lives of the participants and interested a majority of

them. As most of the participants were male, their interest may have influenced their answers regarding the characters 妹 (“younger sister”) and 娘 (“daughter”) considerably. In addition, 輝 (“to shine”) and 痛 (“pain; painful”) stimulated more than 60% of the respondents and facilitated their learning. Positive and negative meanings such as “to shine” and “pain,” respectively, may also have encouraged their learning. Taking account that five out of six characters featured in the questionnaire contained 10 or more strokes, the results possibly suggest that learners’ interest in particular characters could encourage many students to learn the characters with 10 or more strokes. With such knowledge, the teacher may be able to introduce pairs of Kanji in which one is more complex at an earlier stage of the learning process.

4.6 Results of Test 3

4.6.1 Detailed results of Test 3

Table 40 demonstrates the detailed results of Test 3. In total, the average scores of the experimental and control groups were 17.03 and 10.58, respectively (n = 116).

Table 40: Details of Results of Test 3 (n = 116)

	Experimental Group	Control Group
Group Total	954	635
Mean Scores	17.03 (maximum: 28)	10.58
SD	4.931	3.475
Number of Participants	56	60
p-Value	< 0.001	
t-Value	8.099 (> 1.982)	
DF	114	

Table 40 demonstrates the detailed results of the third test. In total, the average scores of the experimental and control groups were 17.03 and 10.58, respectively (n = 116). At a 5% significance level, a significant difference was found between the scores of the two groups ($p < 0.001$). Multiple linear regression indicates that the experimental group had an effect size of 6.4 more correct answers than the control group (df = 114, R^2 = 0.3651, $p < 0.001$). This shows that the use of the presentation method enabled an improvement of 6.4 points, i.e., 22.9% in the scores of the experimental group. Figure 7 demonstrates the mean and standard deviation of the experimental and control groups in Test 3.

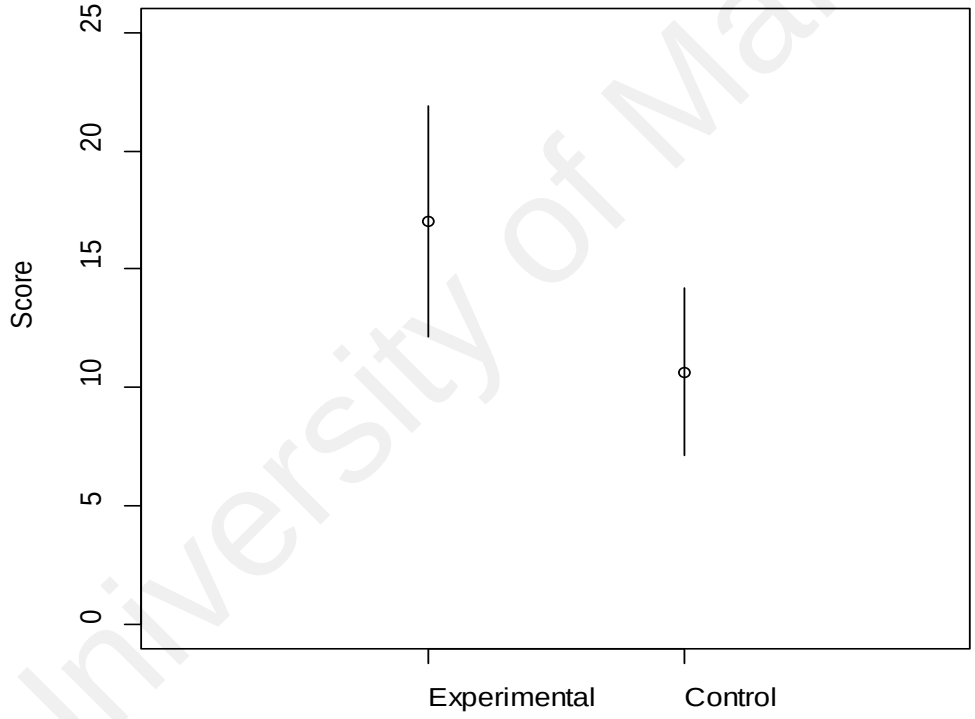

Figure 7: Mean and Standard Deviation of the Experimental and Control Groups (Test 3)

Figure 8 demonstrates the Bootstrapped means and 95% confidence intervals for the proportion of correct answers regarding Types 1, 2a, 2b, and 3 Kanji characters (1000 Bootstrap replicates). Statistically significant differences were found between Types 1

and 3 and between Types 2a and 2b; however, no significant difference was observed either between Types 1 and 2a or between Types 2b and 3. The analysis of variance (ANOVA) was not employed to analyze the data because the factors (Kanji types) in the test were not independent, that is, each participant's score for each factor was not statistically independent.

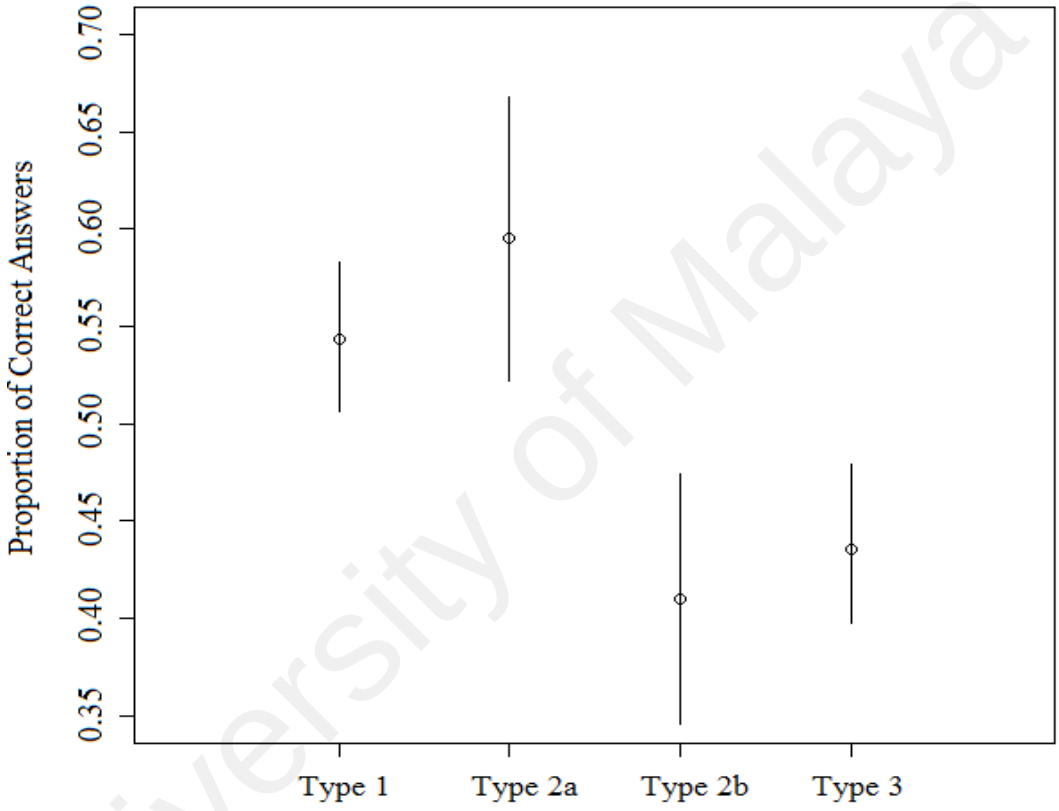

Figure 8: Bootstrapped Means and the 95% Confidence Intervals for Proportion of Correct Answers regarding Types 1, 2a, 2b, and 3 Kanji Characters

4.6.2 Numbers of participants who chose correct answers in Test 3

Table 41 demonstrates the numbers of correct answers for each question in Test 3.

The characters 魚, 火, 漁, 光, 妹, 言, 海, 娘, 痛, 鋼, and 生 were the 11 most correctly identified characters for the total participants in the third test. Among these, Type 1 characters were 魚, 火, 漁, 光, 言, and 生. Type 2 characters were 妹 and 娘 (both being labeled as Type 2a). Type 3 characters were 痛, 海, and 鋼. Characters with 10 or more strokes were 魚, 漁, 娘, 痛, and 鋼. The results indicate that Type 1 and Type 2a characters were more difficult than Type 2b and Type 3 characters.

Table 41: Numbers of Correct Answers for Each Question in Test 3 (n = 116)

(T1: Type 1, T2: Type 2, T3: Type 3)

Question Number	Numbers of Correct Answers from Respondents for Each Character
1 (生 T1)	60 (ninth most-correctly identified)
2 (漁 T1)	76 (third most-correctly identified)
3 (火 T1)	78 (most-correctly identified)
4 (光 T1)	75 (fourth most-correctly identified)
5 (語 T1)	57
6 (見 T1)	56
7 (海 T3)	67 (seventh most-correctly identified)
8 (痛 T3)	60 (ninth most-correctly identified)
9 (鋼 T3)	60 (ninth most-correctly identified)
10 (瞳 T2)	47 (fifth least-correctly identified)
11 (産 T1)	43 (fourth least-correctly identified)
12 (言 T1)	68 (sixth most-correctly identified)
13 (視 T1)	55
14 (過 T3)	49 (seventh least-correctly identified)
15 (地 T3)	40 (third least-correctly identified)

16 (魚 T1)	78 (most-correctly identified)
17 (娘 T2)	64 (eighth most-correctly identified)
18 (洋 T3)	53
19 (聞 T3)	51 (eighth least-correctly identified)
20 (眼 T2)	48 (sixth least-correctly identified)
21 (鉄 T3)	55
22 (病 T3)	37 (second least-correctly identified)
23 (場 T3)	29 (least-correctly identified)
24 (輝 T1)	52 (ninth least-correctly identified)
25 (通 T3)	53
26 (聴 T3)	51 (ninth least-correctly identified)
27 (妹 T2)	74 (fifth most-correctly identified)
28 (焼 T1)	57

On the other hand, the 10 least correctly identified characters were 場, 病, 地, 産, 瞳, 眼, 過, 聴, 聞, and 輝. The Kanji 場 was correctly identified by only 29 out of the total of 116 participants. Among these, Type 1 characters were 産 and 輝. The two Type 2b characters 瞳 and 眼 were correctly identified by 47 and 48 out of 116 participants, respectively. These appeared to be more difficult than the Type 2a characters 妹 and 娘 that were correctly recognized by 74 and 64 participants, respectively. Among Type 3 characters 場, 病, 地, 過, 聴, and 聞, 場 was correctly identified by 29 participants and was the least correctly recognized character.

Table 42: The 10 Characters Which Demonstrated the Maximum Differences in the Number of Correct Answers between the Two Groups (Test 3)

(* Significant to 0.05, ** Significant to 0.01, *** Significant to 0.001)

(T1: Type 1, T2: Type 2, T3: Type 3)

Kanji	Experimental Group (n = 56)	Control Group (n = 60)	t-test Results
鋼 (T3)	43 (76.8%)	17 (28.3%)	t = 5.9271, df = 113.997, p < 0.001***
見 (T1)	40 (71.4%)	16 (26.7%)	t = 5.3405, df = 113.053, p < 0.001***
光 (T1)	49 (87.5%)	26 (43.3%)	t = 4.3691, df = 85.411, p < 0.001***
娘 (T2)	43 (76.8%)	21 (35.0%)	t = 4.9601, df = 113.697, p < 0.001***
輝 (T1)	37 (66.1%)	15 (25.0%)	t = 4.8223, df = 111.19, p < 0.001***
漁 (T1)	48 (85.7%)	28 (46.7%)	t = 4.864, df = 106.029, p < 0.001***
聞 (T3)	35 (62.5%)	16 (26.7%)	t = 4.1169, df = 111.149, p < 0.001***
魚 (T1)	46 (82.1%)	32 (53.3%)	t = 3.4719, df = 110.014, p < 0.001***
語 (T1)	34 (60.7%)	23 (38.3%)	t = 2.4502, df = 113.367, p < 0.05*
痛 (T3)	35 (62.5%)	25 (41.7%)	t = 2.2757, df = 113.692, p < 0.05*

As shown in Table 42, the 10 characters in Test 3, which demonstrated the maximum differences in scores between the experimental and control groups, were 鋼, 見, 光, 娘, 輝, 漁, 聞, 魚, 語, and 痛. More than 60% of the experimental group correctly recognized these 10 characters, and the smallest difference between the percentages of correct responses from the two groups was 20.8% for 痛. The high proportion of the correct answers from the experimental group may justify the opinion of Chikamatsu (2006), who affirmed that high-performance participants frequently recognized the visual features of the Japanese words tested in her study. Among the 10 characters demonstrated in Table 42, 見, 光, 輝, 漁, 魚, and 語 were Type 1 characters. 娘, a Type 2a character, was ranked fourth. Type 3 characters 鋼, 痛, and 聞 were ranked

first, sixth, and eighth, respectively. 鋼, 漁, and 魚 were newly introduced in Test 3.

The difference between percentages of correct answers for 漁 was 39%, and 85.7% of the experimental group selected the correct answer. 光 was correctly identified by 87.5% of the experimental group, and the difference between percentages of correct responses given by the two groups was 44.2%. In addition, 76.8% and 66.1% of the experimental group correctly recognized 娘 and 輝, respectively, and the difference between the percentages of correct answers given by both groups for both characters was approximately 41%. The proportion of the correct responses from the control group for 輝 was 25.0%, the lowest among the 10 characters in Table 42. The differences between the experimental and control groups may justify the view of Toyoda (2007), who emphasized the importance of the explicit demonstration of Kanji components, and that of Everson (2011), who highlighted the importance of enhancing students' ability to recognize the semantic elements of characters from an early learning stage.

The results also indicate that the presentation method used for Test 3 facilitated the learning of characters with 10 or more strokes (鋼, 娘, 輝, 痛, 漁, 聞, 魚, and 語). More than 70% of the experimental group correctly identified 鋼, 見, 光, 娘, 漁, and 魚, among which 魚 was the most correctly identified (53.3%) by the control group.

In contrast, 鋼, 聞, and 見 were correctly recognized by only 28.3%, 26.7%, and 26.7% of the control group, respectively. The low proportion of correct answers from the control group appears to be related to the difficulty of Kanji characters suggested by Mori (1998), who pointed out that native speakers of an alphabetical language are required to limit their use of phonological processing strategies to read Kanji characters. The visual complexity of 鋼 and 聞 may have been the primary

reason for the low percentage of correct answers observed in the control group. Most participants in the control group who could not correctly identify 見 were confused by the incorrect options provided for the question: 視, 現, and 覚. The presentation method suggested in this study enabled an increase of at least 35% in scores for the three characters, which appeared to be difficult for the majority of the control group participants. The difficulty primarily faced by the control group was similar to that described in Matsumoto (2013), who reported that beginners of Japanese whose first language is based on an alphabet were required to improve their semantic processing skill to learn Kanji characters more effectively. The lowest scores from the control group were 4, 5, and 6 out of 28, thus indicating that etymological explanations of the taught characters need to be provided, as recommended by Shimizu and Green (2002), who investigated teaching strategies used by Japanese-language teachers working in the U. S. and Canada.

4.7 Comparison of the results of Tests 2 and 3

Among the Kanji characters that were most accurately recognized by the experimental groups in Tests 2 and 3, 輝 (Type 1), 見 (Type 1), 娘 (Type 2), and 痛 (Type 3) were observed to be in common. It suggests that the presentation method proposed by this study enabled the majority of the experimental group in both tests to learn the four characters.

As shown in Table 43, the percentages of participants from the experimental groups in Tests 2 and 3 who correctly identified the Type 1 Kanji 輝, shown with 光, are 87.5% and 66.1%, respectively. The percentages of participants from both groups who identified 見, a Type 1 character demonstrated with 視, are 78.6% and 71.4%, respectively. The Type 2 Kanji 娘, which was shown with 妹, was correctly identified by 75.0% of the experimental group in Test 2 and 76.8% of that in Test 3. The Type 3

Kanji 痛, indicated with 病, was correctly recognized by 69.6% of the experimental group in Test 2 and 62.5% of that in Test 3.

Table 43: Examples of the Characters Most Correctly Identified by the Experimental Groups in Tests 2 and 3

T1: Type 1 T2: Type 2 T3: Type 3	
輝 (T1) (Test 2) 87.5%; (Test 3) 66.1%	見 (T1) (Test 2) 78.6%; (Test 3) 71.4%
娘 (T2) (Test 2) 75.0%; (Test 3) 76.8%	痛 (T3) (Test 2) 69.6%; (Test 3) 62.5%

In contrast, the major difference between the results regarding the most accurately identified characters was shown in Tables 44 and 45.

Table 44: Examples of the Characters Most Correctly Identified by the Experimental Group in Test 2

T1: Type 1 T2: Type 2 T3: Type 3			
銭 (T1) 75.0%	通 (T3) 75.0%	焼 (T1) 71.4%	妹 (T2) 66.1%
病 (T3) 58.9%	場 (T3) 55.3%	叫 (T3) 51.8%	産 (T1) 50.0%

Table 45: Examples of the Characters Most Correctly Identified by the Experimental Group in Test 3

T1: Type 1 T2: Type 2 T3: Type 3			
漁 (T1) 85.7%	魚 (T1) 82.1%	鋼 (T3) 76.8%	海 (T3) 66.1%
聞 (T3) 62.5%	語 (T1) 60.7%	鉄 (T3) 57.1%	洋 (T3) 55.3%

Among the characters, those with 10 strokes or more in Table 44 and Table 45 are 銭, 焼, 場, and 産 and 漁, 魚, 鋼, 聞, 語, and 鉄, respectively. The results indicate that the explicit presentation of semantic similarities suggested in this study facilitated the learning of Kanji characters including visually complex characters, most of which consist of more than 10 strokes. The presentation of pairs of Kanji characters such as

光 and 輝 assisted the Kanji learning of the majority of the experimental groups of the three vocabulary tests in this study. The large number of strokes of visually complex characters such as 輝 and 鋼 did not hinder their learning to a large extent. In particular, the written instructions provided to the experimental group in Test 3 may have been more efficient for the learning of Kanji characters having more than 10 strokes as compared with those of the two previous tests.

Furthermore, the Kanji pairs 漁 and 魚, 鋼 and 鉄, and 海 and 洋 presented in Table 45 assisted the Test 3 experimental group in learning both characters in each pair. In the results for Tests 1 and 2, some examples were observed in which one of the pair was found to be among the most-frequently identified characters, whereas the other was one of the least-frequently identified characters: 心, 意, 人, 他, 雨, and 雲 in Test 1 and 生, 産, 痛, and 病 in Test 2. As the content had been more balanced in Test 3, hindrance by either of a pair of characters occurred less frequently among the experimental group than in the two previous tests.

CHAPTER 5: CONCLUSION

5. Conclusion

The aforementioned results of the three experimental tests suggest that an explicit presentation of the semantic similarities between Japanese Kanji characters and their Malay equivalent words could assist native Malay-speaking university students in learning basic Kanji characters.

5.1 Primary significance of the study

In relation to the three research questions (see Section 1.7), the primary significance of the study is analyzed as follows:

1. Usefulness of Malay, the learners' first language, to demonstrate Malay equivalents of the selected Japanese Kanji characters and provide written instructions in Malay

The results of the three tests conducted in this study revealed that written instructions in Malay assisted Malay-speaking university students in learning the listed Kanji characters with statistically significant differences. In Test 2, the majority of the experimental group correctly identified characters, such as 輝 ("to shine") (Type 1), 焼 ("to burn") (Type 1), 視 (part of 視力 "eyesight") (Type 1), 妹 ("younger sister") (Type 2a), 娘 ("daughter") (Type 2a), 痛 ("pain, painful") (Type 3), and 場 ("place") (Type 3). In Test 3, the experimental group often correctly recognized characters, such as 魚 ("fish") (Type 1), 漁 (part of 漁業 "fishery") (Type 1), 妹 ("younger sister") (Type 2a), 娘 ("daughter") (Type 2a), and 海 ("sea") (Type 3).

The Type 1 characters 輝 ("to shine"), 焼 ("to burn"), 視 (part of 視力 "eyesight"), and 漁 (part of 漁業 "fishery") included more than 10 strokes and

appeared to be visually complex for the Malay-speaking students who participated in the tests. The Malay words *bercahaya* (“to shine”) from *cahaya* (“light”) and *membakar* (“to burn”) from *bakar* (root meaning “burn”) were the equivalent of the listed Japanese words 輝く (“to shine”) and 焼く (“to burn”). Both the Malay words were derived by prefixes. This type of derivation could assist the participants of the experimental group in learning these characters. The Malay words *penglihatan* (“eyesight”) from *lihat* (root meaning “see”) and *perikanan* (“fishery”) from *ikan* (“fish”) that correspond to the Japanese words 視力 (“eyesight”), and 漁業 (“fishery”) comprised a combination of a prefix and a suffix. The Type 3 character 痛 (“pain, painful”) was also demonstrated with the Malay *kesakitan* (“pain”), which was derived by another combination of a prefix (*ke-*) and a suffix (*-an*). Even these complex affixes were able to foster the learning of the relevant characters by the majority of participants. The other two Type 3 characters 場 (“place”) and 海 (“sea”) were introduced with the Malay words *tempat* (“place”) and *laut* (“sea”), both of which are root words. Therefore, during the tests the participants of the experimental group may have been able to concentrate on the details of the form of the characters while learning them.

2. Effectiveness of explicitly presenting pairs of Kanji characters with approximately 10–19 strokes, which share common components to assist Malay speakers’ learning of Kanji characters

The test results also suggest that presenting pairs of Kanji characters that share common components could facilitate the learning of the Kanji characters in this study by Malay-speaking students. In particular, the comparative presentation of pairs of Japanese words and their Malay equivalents along with written instructions in Malay assisted Test 2 participants in learning visually complex characters, such as 輝 (“to shine”) (Type 1), 銭 (“money”; part of 小銭 “small change”) (Type 1), 視 (part of

視力 "eyesight") (Type 1), 焼 ("to burn") (Type 1), 妹 ("younger sister") (Type 2a), 娘 ("daughter") (Type 2a), 痛 ("pain, painful") (Type 3), and 通 ("to pass") (Type 3), which were included in the most frequently identified characters by the experimental group participants in Test 2 (see Table 38). 銭 and 痛 were also included in the characters most correctly identified by the experimental group participants in Test 1 (see Table 32).

In addition, the method of presentation suggested in this study helped Test 3 participants to learn characters, such as 魚 ("fish") (Type 1), 漁 (part of "fishery") (Type 1), 語 ("word"; part of 言語 "language") (Type 1), 輝 ("to shine") (Type 1), 娘 ("daughter") (Type 2), 鋼 ("steel") (Type 3), 聞 ("to hear") (Type 3), and 痛 ("pain, painful") (Type 3), which were included in the most frequently identified characters by the experimental group participants in Test 3 (see Table 42). 輝, 娘, and 痛 were also included in the characters most correctly identified by the experimental group participants in Test 2.

Table 44 (see Section 4.7) that demonstrated examples of the characters most frequently identified by Test 2 included four characters with more than 10 strokes: 銭, 焼, 場, and 産. Table 45 that exemplified the characters most frequently identified in Test 3 included six characters: 漁, 魚, 鋼, 聞, 語, and 鉄. The results indicate that the method of presentation proposed by this study accelerates the experimental group participants' learning of Kanji characters including visually complex characters. Explicitly indicating the common components in Kanji characters helped the experimental group in each test to recognize forms and focus on components of the listed Kanji characters a given time frame for learning during the test.

The inclusion of several characters that were among the most correctly identified ones in the experimental group's test results would contribute to the improvement of

textbooks used in Malaysian secondary schools or universities. For instance, the test results suggest that the characters 輝, 痛, 視, 娘, 漁, 鉄, 銭, and 鋼 that were not demonstrated in Malaysian secondary school textbooks could be added and presented with the Japanese Kanji characters that share a common component.

3. Benefits of the three Kanji character types proposed in this study

Most of the Type 1 characters included pictograms such as 火 ("fire") and were the easiest of all the types for the experimental groups in the three tests. However, the Type 2a characters 妹 ("younger sister") and 娘 ("daughter") were included among the easiest to learn in both Tests 2 and 3 (see Figures 6 and 8). The similarities between the Japanese 妹 ("younger sister"), including the radical 女 ("woman"), and its Malay equivalent *adik perempuan* (compound of *adik* "younger sibling" and *perempuan* "female") and those between the Japanese 娘 ("daughter"), which also included the component 女, and its Malay equivalent *anak perempuan* (compound of *anak* "child" and *perempuan* "female") appeared to be the easiet to comprehend for the participants of the experimental group in the tests.

Type 2b characters 眼 and 瞳 that were used in Test 3 constituted the most difficult-to-recognize category among the types of characters proposed in this study. The major reason for this difficulty was the difference in association in each pair of Japanese and Malay words. The Kanji 眼 was the first character in the Japanese word 眼鏡 ("glasses"), whereas the Malay equivalent *cermin mata* consisting of *cermin* ("mirror") and *mata* ("eye") included *mata* as the second word in the compound. Only 38% of the participants in the experimental group in Test 3 accurately recognized the character. The Kanji 瞳 ("pupil of the eye"), which is a single Japanese word, was correctly identified by 52% of the experimental group participants in Test 3. Its Malay

equivalent depicted in Test 3 was *anak mata*, which included *anak* (“child”) and *mata* (“eye”).

The three Kanji types proposed in this study were beneficial for a comparative presentation of Japanese and Malay words sharing several levels of similarities as the categorization was elaborated according to the degrees of similarity between the Japanese Kanji characters and their Malay equivalent words. The results of the study indicated that the learning of complex Type 1 (e.g., 輝 and 視) characters was significantly encouraged by comparative presentation with simpler Type 1 characters (e.g., 光 and 見). The comparative presentation of common components of Type 2a characters (妹 and 娘) and Type 3 characters (e.g., 痛, 海, 通, 場, and 鋼) and their Malay equivalents were helpful to the majority of the experimental group participants.

In addition, a Malaysian Japanese-language teacher interviewed by the author, most of the native Japanese teachers who answered a questionnaire survey analyzed in Section 4.3.2, and most native Malay-speaking students who participated in another questionnaire survey discussed in Section 4.5 affirmed the benefits of the presentation method proposed in this study (see Sections 4.3.1, 4.3.2, and 4.5). Therefore, the method and the categorization of Kanji characters suggested in this study may be beneficial in classroom teaching and in asynchronous self-study, particularly for Malay-speaking Japanese beginners who have learned fewer than 100 Kanji characters.

The results of the questionnaire survey described in Section 4.5 indicate that learners’ individual interest in characters with very positive meanings (e.g., “to shine”), or negative meanings (e.g., “pain”) helped them to learn such characters. The number of strokes seems an important feature to predict the degree of difficulty of particular characters. However, learners’ interest can often alleviate this difficulty. If teachers have sufficient time to teach additional Kanji characters in the classroom, it is desirable for them to propose a wide range of options from which learners are allowed to choose

according to their interests.

An example of self-study materials based on the presentation method of this study is the data files distributed to students in the form of a CD-ROM or smartphone application. These could be used in any location. The application will provide a selection of Malay roots and compounds related to Japanese equivalents. An example of pairs is *anak perempuan* (“daughter”) and *adik perempuan* (“younger sister”), and their Japanese equivalents (娘 and 妹, respectively).

5.2 Limitations

The main limitation of this study relates to the limited number of Japanese and Malay words that share semantic similarities. The presentation method described in this study is nonetheless appropriate for the systematic learning and revision of basic Kanji characters by Malay-speaking beginners. As the vocabulary experiments in this study required a Malaysian university in which nearly 90% of students were native Malay speakers, the author was unable to locate the same Malay-speaking participants for subsequent tests to examine their long-term retention. In addition, none of the participants included in the study had previous knowledge of Kanji characters, and it was not possible to carry out delayed production post-tests for the listed characters in the allotted 30 minutes. Future studies would require the exploration of numerous aspects not covered by this study, as well as research designs that allow for more long-term measuring of the impact on retention.

5.3 Future perspective

The vocabulary tests administered as part of this study included only native Malay-speaking students as participants. Although the extent of the effectiveness may be limited, the vocabulary lists and presentation method suggested in the study will also

benefit any group of Malay-speaking Malaysians, such as the majority of ethnic Chinese Malaysians, who do not speak Malay as their first language but have Malay-language proficiency in terms of basic or a higher level of communication.

In addition, the Malaysian Japanese-language teacher in a Malaysian secondary school, who was interviewed twice for purposes of this study (cf. Sections 3.6.1 and 4.3.1), stated that the presentation method proposed in this study could be useful for Malay-speaking beginners of Japanese in Malaysian secondary schools. L1 written explanations regarding the shared Kanji components and semantic similarities between Japanese and Malay would be very helpful for both their Japanese-language learning and to enhance their understanding of word meanings.

For future studies, it would be desirable to examine the possibility of developing teaching materials comprising vocabulary lists and instructions in Malay such as those suggested. According to a 2015 survey by the Japan Foundation (2017, p. 13), 745,125 Indonesians were currently studying the Japanese language. Most Malay words in the vocabulary lists used in this thesis have identical spellings in the Indonesian language. With small modifications, the vocabulary and written instructions used in this study could benefit thousands of Indonesian learners of Japanese.

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