EVALUATING GENERATIVE ARTIFICIAL INTELLIGENCE AND INTERNET SEARCHES IN FOREIGN LANGUAGE GRAMMAR LEARNING: EXAMINING THE ROLE OF EXPERTS THROUGH A STUDY ON VOCABULARY BEGINNING WITH “MER-” IN MALAY

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Abstract

This study aimed to clarify the usefulness and limitations of generative artificial intelligence (AI) and online information in the self-study of foreign languages, and to reassess the domain of roles that humans, such as language teachers and experts, should perform. As a learner of Malay, the author attempted to pursue this objective by seeking solutions to grammar-related questions that arose during the process of learning Malay without directly asking teachers or specialists, instead posing questions to generative AI or conducting Internet searches.

The author first pursued the question of using the form "mer-" as a prefix-like element in Malay. The author attempted to resolve this question by applying it to generative AI, including ChatGPT, and by conducting an Internet search. It transpired that the generative AI could not distinguish between prefixes and other elements, and thus failed to resolve the question. Next, through an Internet search and reviewing literature, although no discussions on "mer-" were found in Japan, the following three positions regarding "mer-" were observed in Malaysia: (1) the prefix "mer-" does not exist at all, (2) "mer-" used to be a prefix in the past but was no longer considered as such, and (3) it should be "mar-" instead of "mer-". However, it was not possible to obtain information on whether there possibly were other positions, or if one of these positions had been conclusively proven to be correct. Translations by ChatGPT proved to be useful for understanding literature written in Malay. Internet searches were effective in identifying the relevant literature, even with small search terms. Language teachers and experts are needed for answering to learner’s grammar-related questions. They would also contribute to the development of specialized AI capable of answering grammar-related questions, enabling AI to fulfill this role for learners in the future. Language teachers and experts can then focus on researching other unresolved issues.

Keywords: generative AI, self-study, language learning, human expertise, Malay prefix

1 INTRODUCTION

Significant changes have recently been made to foreign language learning methods. The rapid development of language-learning applications and video-sharing websites has enabled self-study without the need to rely on language schools. Learners can enjoy further interactive learning experiences, such as practicing exercises using applications that provide immediate responses or interactive with generative artificial intelligence (AI). However, certain valuable
roles in foreign-language learning are thought to be only capable for humans. In particular, detailed explanations and answers to learners’ grammar-related questions may play an important role. However, for languages such as Malay, for which limited learning materials and language schools are available in Japan, learners often have no choice but to resolve their queries through self-study. In such cases, Internet searches and generative AI have the potential to maximize the effectiveness of searching for correct answers.

This study aims to clarify the usefulness and limitations of generative AI and online information in the self-study of Malay as a foreign language and reassess the domain of roles that humans, such as language teachers and experts, should perform. The author learns Malay as a foreign language and attempts to pursue this objective as a learner (not a researcher) by seeking solutions to grammar-related questions that arose during the process of learning Malay without directly asking teachers or specialists, instead posing questions to generative AI or conducting Internet searches. Specifically, the author pursued the question of using the form “mer-” as a prefix-like element in Malay. In this section, the author would like to illustrate the usage of Malay words starting with “mer-” in Malaysia and how those words are used in Malay grammar books or dictionaries published in Japan. Next, the author would like to explain the grammatical question about the form “mer-.” In the second section, the author explains the attempt to resolve this question by applying it to generative AI, Bard, and ChatGPT and by conducting an Internet search. In the third section, the author would like to present the findings and discuss the usefulness and limitations of generative AI and online information in the self-study of foreign languages. The author then reassesses the domain of roles that humans, such as language teachers and experts, should perform.

1.1 Current usage of “mer-” in Malaysia

The first word that appears to use “mer-” as a prefix would be “merbahaya,” which means dangerous. This word is commonly observed in Malaysia in the form of a street sign, “Awas! Merbahaya” (Be careful! Dangerous), and a labeling instruction, “Bahan Merbahaya” (Hazardous Material). The word has also been used in newspaper articles. For example, by inputting “merbahaya” into the search window of the Malaysian newspaper, Berita Harian, numerous articles containing “merbahaya” were found and appears to be commonly used in Malaysia.

However, advice not to use the word are also frequently observed. For example, the advisory service, Khidmat Nasihat offered by Dewan Bahasa dan Pustaka (DBP), posted questions from
citizens regarding the usage of “merbahaya” and answered repeatedly that the word was wrong and the appropriate word should be “marabahaya,” or “berbahaya,” which starts with prefix “ber-.” For instance, by inputting “merbahaya” into the search window of “Carian Kata (word search)” corner of the website, 19 pairs of questions and answers regarding “merbahaya” were found (accessed on 25th July, 2023). The picture in Fig. 1 was obtained from the website, and the author has provided its English translation, as displayed in Table 1.

![Figure 1. A question and an answer in Khidmat Nasihat, DBP.](image)

**Table 1. English translation of Fig. 1 by the author.**

<table>
<thead>
<tr>
<th>Advisory Service</th>
<th>Question</th>
<th>Answer</th>
<th>Question Type</th>
<th>Question Date</th>
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<tr>
<td>The DBP Advisory Service clarifies that the word “merbahaya” does not exist because there is no prefix “mer-.” But the word “merbahaya” is still used a lot under the DBP terminology section, such as hazardous material being referred to as “bahan merbahaya” and so on. Please explain about it. Thank you</td>
<td>The word “merbahaya” has been used in the past. It is not used now. The correct word is “marabahaya,” which means various disasters or dangers. 1. According to Kamus Dewan Fourth Edition, the term merbahaya is indeed recorded, but it is written as merbahaya -&gt; marabahaya. For your information, the arrow symbol (-&gt;) means “see.” Therefore, the correct term is “marabahaya.”</td>
<td>Terminology</td>
<td>21. 07. 2014</td>
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However, even after examining the answer above, the following two questions remain:
(1) Even if “merbahaya” is incorrect, why do other words starting with “mer-” continue to exist, such as “merapi” of Mount Merapi, which looks like “mer-” + api (fire), and “mertua (parent-in-law),” which looks like “mer-” + tua (old)? Besides, Kamus Dewan Fourth Edition (DBP, 2005) records some other words that look like “mer-” + X.

(2) If “marabahaya” is correct instead of “merbahaya,” what does “mara” mean? And is it possible to attach “mara” to other words instead of “mer-”? However, words such as “maraapi” or “maratua” are not found in dictionaries.

1.2 A literature review on the use of “merbahaya” in publications in Japan
The author searched major Malay grammar books published in Japan such as Tsuruoka (1943), Asakura (1965), Onozawa (1996), and Nomoto (2020); however, the form “mer-” was not counted as a prefix in these books. Although the word “merapi” was written in Tsuruoka (1943), “mer-” was not explained, either. Similarly, the words “merbahaya,” “mertua,” or “merapi” are recorded in dictionaries published in Japan such as Onozawa (1991), Onozawa and Honda (2007), and Faridah and Zetou (2020); however, no explanation was found about “mer-.” Learners would not be able to know why different forms of “bahaya” are found as “berbahaya” and “merbahaya” simultaneously. As seen above, while three words using the form “mer-” as a prefix-like element, “merbahaya,” “mertua,” and “merapi” were found in Malay grammar books and dictionaries published in Japan, no explanation about the form “mer-” was found.

1.3 A grammatical question about the word “merbahaya”
As stated above, the author is not a researcher in Malay but is learning it as a foreign language in Japan, where the learning resources for Malay, such as learning materials, classes, and teachers, are limited. The question about the form “mer-” arose by examining the words “merbahaya,” “mertua” and “merapi;” however, at first, no clue seemed to exist. The author found that the explanations by DBP above was hard to accept because “merbahaya” was frequently found in public. This was not a personal question for the author. Notably, the issue about the word “merbahaya” is listed as “Frequently Asked Questions” in the DBP website mentioned above, which suggests that many Malaysian citizens wish to know about it. The author considered this situation as an opportunity to examine the usefulness of generative AI and online information in Malay self-study. The author expected that through this attempt, the domain of roles that humans should perform would be suggested.
2 METHODOLOGY

For foreign language learners who study with limited resources, generative AI and Internet searches would be the technology available nearby. First, the author attempted to resolve this question by applying it to generative AI. Second, the author investigated the literature on this issue through Internet searches.

2.1 Applying the question to generative AI

Bard and GPT-4 were selected because they are widely known and familiar to many learners. The author asked two equal questions to these generative AI. The questions were asked on the same day, because the answers provided by generative AI may change depending on the day.

(1) Does Malay have a prefix “mer-”? If so, please provide some examples of words with the prefix “mer-.”

(2) Is the “mer-” in Malay words such as “merbahaya” and “mertua” a prefix?

Here, the author presents the answers provided by the generative AI.

Table 2. The answer by Bard (on July 29, 2023).

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<tr>
<td>(1)</td>
<td>Yes, Malay has a prefix &quot;mer-.&quot; It is a verb-forming prefix that is used to create verbs from nouns or adjectives. The meaning of the resulting verb is to become or to make something become the noun or adjective that the prefix is attached to. Here are some examples of words with the prefix &quot;mer-&quot;:</td>
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<td>merapih (to become neat or tidy) from the noun rapih (neat, tidy)</td>
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<td></td>
<td>merayakan (to celebrate) from the noun raya (celebration)</td>
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<td></td>
<td>mermai (to become a mermaid) from the adjective mai (mermaid)</td>
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<td></td>
<td>merdu (to become melodious) from the adjective du (melodious)</td>
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<tr>
<td></td>
<td>meracun (to poison) from the noun racun (poison)</td>
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<td></td>
<td>The prefix &quot;mer-&quot; is not used very often in spoken Malay. It is more common in formal settings, such as in news reports or academic writing.</td>
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<td>(2)</td>
<td>The &quot;mer-&quot; in Malay words such as &quot;merbahaya&quot; and &quot;mertua&quot; is not a prefix. In these words, the &quot;mer-&quot; is part of the root word. The root word &quot;mer&quot; means &quot;to be&quot; or &quot;to become.&quot; So, &quot;merbahaya&quot; means &quot;to be dangerous&quot; and &quot;mertua&quot; means &quot;to be a parent-in-law.&quot; The prefix &quot;mer-&quot; is used to create verbs from nouns or adjectives. However, in the words &quot;merbahaya&quot; and &quot;mertua,&quot; the &quot;mer-&quot; is not attached to a noun or adjective. Therefore, it is not a prefix.</td>
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The answer (1) above is invalid because very obviously “merapih” is formed from “me-” + “rapih,” where “r” is a part of the root word, “rapih.” Similar mistakes are also observed with “merayakan” and “meracun.” The AI did not distinguish between prefixes and other elements.

Answer (2) also seems to be incorrect because “mertua” is not a verb but a noun.

Table 3. The answer by GPT-4 (on 29th July, 2023).

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<tr>
<td>(1)</td>
<td>Yes, Malay language does have a prefix &quot;mer-.&quot; It is one of many affixes in Malay and is generally used to denote actions, similar to the English &quot;-ing&quot; suffix. It's used in combination with a root word to form a verb. Here are some examples:</td>
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<td>&quot;Makan&quot; means &quot;to eat.&quot; When we add the prefix &quot;mer-&quot; it becomes &quot;makan&quot; -&gt; &quot;mermakan,&quot; which translates to &quot;eating.&quot;</td>
<td></td>
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<tr>
<td>&quot;Tulis&quot; means &quot;to write.&quot; When we add the prefix &quot;mer-&quot; it becomes &quot;tulis&quot; -&gt; &quot;mertulis,&quot; which translates to &quot;writing.&quot;</td>
<td></td>
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<tr>
<td>&quot;Nyanyi&quot; means &quot;to sing.&quot; When we add the prefix &quot;mer-&quot; it becomes &quot;nyanyi&quot; -&gt; &quot;mernyanyi,&quot; which translates to &quot;singing.&quot;</td>
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<tr>
<td>&quot;Lari&quot; means &quot;to run.&quot; When we add the prefix &quot;mer-&quot; it becomes &quot;lari&quot; -&gt; &quot;merlari,&quot; which translates to &quot;running.&quot;</td>
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<tr>
<td>&quot;Dengar&quot; means &quot;to listen.&quot; When we add the prefix &quot;mer-&quot; it becomes &quot;dengar&quot; -&gt; &quot;merdengar,&quot; which translates to &quot;listening.&quot;</td>
<td></td>
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<tr>
<td>Do note that, like in many languages, there are some exceptions to this rule and sometimes the use of &quot;mer-&quot; will slightly change the meaning of the root word.</td>
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<td>(2)</td>
<td>In the Malay language, not every word that begins with &quot;mer-&quot; is utilizing &quot;mer-&quot; as a prefix in the grammatical sense. In the examples you provided:</td>
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<td>&quot;Merbahaya&quot; isn't a valid word in Malay. If you're referring to &quot;berbahaya,&quot; it means &quot;dangerous.&quot; In this case, &quot;ber-&quot; is a prefix, not &quot;mer-.&quot;</td>
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<tr>
<td>&quot;Mertua&quot; means &quot;in-law&quot; as in &quot;mother-in-law&quot; or &quot;father-in-law.&quot; In this case, &quot;mer-&quot; isn't functioning as a prefix but is simply part of the word.</td>
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<tr>
<td>So, it's important to understand the context and know the base word to determine if &quot;mer-&quot; is being used as a prefix or not.</td>
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The answer (1) above seemed doubtful because the words “ermakan,” “mertulis,” “mernyanyi,” “merlari,” and “merdengar” are not found in the dictionary. The author additionally asked GPT-4 whether these words existed in Malay, and it answered “No, those words do not exist in the Malay language,” which revealed its inconsistency. The answer (2)
looks reasonable to some extent; however, the reason some other words that look like “mer-X” exist is unknown.

2.2 Conducting the Internet searches

Because generative AI did not provide plausible answers, the author further investigated the literature on this issue through Internet searches. First, the author searched platforms for scholarly publications in Japan, such as CiNii Research and J-STAGE. However, literature on Malay affixes was limited, and no paper was found regarding “mer-.” Second, the author searched the Malaysian citation index MyCite, which did not yield any results either. Third the author tried to search Google with the words “prefix mer-,” “imbuhan mer-,” and “awalan mer-.” Google search displayed some publications containing “mer-,” most of which are academic books or articles in old journals that were not found in the literature search sites mentioned above. Google Books was used to find the PDF of these publications, and the author was able to find the name of the book or journal and the number of pages that contained the desired search term. However, in the case of journals, the titles and authors of articles were not provided. The picture in the Fig. 2 below displays an example of a search result for a book, and Fig. 3 presents an example of a paper published in a journal.

Figure 2. A book found in Google Books.

Figure 3. A journal paper found in Google Books.
Because of copyright issues, only a small portion of books or papers could be viewed; however, using these small clues, searching for literature in the library was possible. When the library of the author’s affiliated university did not have an item, the author ordered a photocopy through the Inter Library Loan (ILL) service from other libraries in Japan. However, the author did not request overseas deliveries because of budget constraints. The author used GPT-4 for translation to grasp the rough meanings when Malay papers were difficult to comprehend. The author checked the validity of every translation by using dictionaries.

3 FINDINGS AND DISCUSSION

Although no discussions on “mer-” were found in Japanese publications through Internet search and by reviewing literature, the following three positions regarding “mer-” were observed in Malaysian publications: (1) the prefix “mer-” does not exist at all, (2) “mer-” used to be a prefix in the past but was no longer considered as such, and (3) it should be “mar-” instead of “mer-,” as presented in the following subsections. To show the translations that the author relied on during the Internet search, the quotations in Malay, displayed below, have been translated using GPT-4.

3.1 The prefix “mer-” does not exist at all

This position is found in the columns of Dewan Bahasa, a journal issued by the DBP. Nathesan (2007) claimed that “mer-” was not a prefix. DBP (1989) suggested where “merbahaya” had come from and the relationship to “marabahaya” as quoted below.

Dimikian juga pada satu waktu dulu kita bertengkar-tengkar mahu mengekalkan bentuk ejaan merbahaya atas alasan bentuk inilah yang sudah mantap penggunaannya dalam masyarakat kita. Oleh sebab penyelidikan kita belum mendalam pada waktu itu, kita lupa bahawa dalam bahasa kita tiada imbuhan mer- dan tidak banyak antara kita yang mengetahui bahawa ejaan itu terjadi demikian kerana pengaruh ejaan Jawi terhadap ejaan perkataan mara bahaya yang dieja bersambung dalam sistem tersebut. Yang jelasnya, sekarang ini banyak pemakai bahasa sudah lupa akan hal ini dan bentuk yang sebenarnya sudah digunakan sekarang, iaitu berbahaya.

(DBP, 1989: 235)
Similarly, there was a time when we argued over retaining the spelling of “merbahaya” on the grounds that this form was firmly established in its use within our community. Due to our research not being thorough at that time, we forgot that in our language there is no prefix “mer-” and not many of us were aware that the spelling occurred that way due to the influence of the Jawi spelling on the word “mara bahaya” which was spelled continuously in that system. What’s clear is that many language users have now forgotten about this, and the actual form being used now is “berbahaya.”

3.2 “mer-” used to be a prefix in the past but was no longer considered as such

This position was found in Asmah (2008, 2019) and Hassan (1974, 2006). Asmah (2008) suggested that “mer-” was formerly a productive prefix but currently was less productive and seen in words such as in “merbahaya,” “mertua,” “merapi,” as well as tree names such as “meranti” and “mertajam.” Hassan (1974) explained that affixes such as “mer-,” “mem-,” and “teN-” were crystallized and the derived forms containing these affixes were treated as separate lexical items. Similarly, Hassan (2006) explains that these affixes merged with root words and were not productive, as quoted below:

Dalam menyenaraikan imbuhan kata nama ini ada terdapat imbuhan yang sudah usang dan menjadi sebati dengan kata dasar. Sebagai contoh awalan mer- seperti kata terbitan berimbuhan merapi, merbahaya, merbatu, merbulan; awalan mem- seperti dalam kata terbitan membulan, membacang, mempinang, mempisang; dan awalan tem- seperti dalam kata terbitan tempayung, tembangau, tembasah dll. Imbuhan usang ini tidak diambil kira kerana imbuhan-imbuhan seperti ini sudah sebati dengan kata dasar. Malah imbuhan ini tidak produktif, yakni tidak lagi menerbitkan perkataan baru.

(Hassan, 2006: 59)

In listing these noun prefixes, there are some that have become obsolete and have merged with the root words. For example, the prefix “mer-” as seen in derived words like “merapi,” “merbahaya,” “merbatu,” “merbulan”; the prefix “mem-” as in derived words “membulan,” “membacang,” “mempinang,” “mempisang”; and the prefix “tem-” as in derived words “tempayung,” “tembangau,” “tembasah,” etc. These obsolete prefixes are not considered because such prefixes have already integrated with
the root words. Moreover, these prefixes are not productive anymore, meaning they no longer generate new words.

The claim that “mer-” once served as a prefix but now lacks productivity seems to be supported by the fact that, while there are several words starting with “mer-,” the number is limited. The prefix “ber-” can be freely attached to various words, while “mer-” cannot do so. Besides, the claim by DBP that “merbahaya” should be “marabahaya” does not explain the reason “mer-” in “mertua” and “merapi” cannot be substituted by “mara.” According to Gonda (1952), both “mara” and “bahaya” were derived from Sanskrit words and “mara” means “peril.” Then, it seems to be reasonable why the words “maratua” and “maraapi” do not exist.

3.3 It should be “mar-” instead of “mer-”

According to Darwis (2004), in Old Malay (Bahasa Melayu Kuno) the prefix changed from “ma+r” as seen in “marlapas” and “marvuat” to “me+” as in “merbahaya” and “merapi,” and to “be+r” in the words such as “berlepas,” “berbuat,” “berbahaya,” and “berapi” currently seen. This suggests that “mer-” was formerly “mar-.” Furthermore, Shaharir (2022) argued that “mer-” seen in “merbahaya” originally was “mar-” and had been wrongly recognized.


(Shaharir, 2022: 18)
However, up to now, the prefix “mar-” still exists in one word, “bahaya,” turning into “marbahaya” which was changed/altered to “merbahaya” due to the misreading of Palawa letters transliterated into Jawi and Rumi. Some have changed “marbahaya” to “berbahaya,” which was indeed confirmed by epigraphic scholars mentioned in Coedes and Damais (1992). This word was misinterpreted by linguists of the Jawi era, leading some to suggest that this word originated from the contraction of “mara” and “bahaya,” namely “marabahaya.” Some changed it to “merbahaya” and “membahaya,” both of which are present in KD and KDP, but the word “marbahaya” doesn’t exist in those dictionaries. For the history of language evolution and the inherent nature of the Malay language, the prefix “mar-” should be reinstated, and words like “marbahaya” and other “mar-X” mentioned should be included in Malay grammar textbooks and in those dictionaries.

(Note by author: KD means Kamus Dewan and KDP means Kamus Dewan Perdana)

As described above, although Internet searches were useful in identifying literature from limited keywords, they could not lead to a conclusive answer clarifying which position is most plausible. However, the texts translated by GPT-4 were helpful in examining and categorizing the literature within the author’s limited abilities in Malay. For further research, the author would examine the history of Old Malay to determine whether “mar-” lost its productivity after transitioning to “mer-,” or whether “mar-” and “mer-” were originally different entities. Alternatively, the author may proceed in different directions. For instance, in Berita Harian, the term “merbahaya” was most commonly found in articles about traffic accidents. In papers searched via MyCite where “merbahaya” is used, the content often relates to drugs, materials, or diseases. If the term “merbahaya” has become established in specific fields as a particular term or idiom, it is reasonable why it has not been completely replaced by “berbahaya” to this day. However, the author is still at a lower-intermediate level in Malay and prefers to spend time improving general vocabulary skills rather than on such grammatical research. If consulting experts in the future was possible, the author would seek advice on whether this issue has already been resolved, what the current consensus is, how experts view it if it remains unresolved, and how to advance further research.

The generative AI used in this study simply probabilistically connects possible word associations and may not have been well suited for the grammatical analysis attempted in this
study. However, as generative AI is evolving constantly, in the future, GPT-4 or Bard may be capable of providing answers that resolve grammatical questions such as those mentioned above. Alternatively, linguists and research institutions may develop specialized AI, offering tools that can instantly respond to basic queries. Experts can then address only questions that AI cannot answer, potentially sparking new research inquiries. This can enhance the productivity of experts and contribute to advancements in research.

4 CONCLUSION

Thus far, the usefulness and limitations of generative AI and online information in Malay self-studies have been discussed. It transpired that generative AI could not distinguish between prefixes and other elements and thus failed to resolve the question, while translations by GPT-4 proved to be useful for understanding the literature written in Malay. Internet searches were effective in identifying relevant literature, even with small search terms. The domain of roles that humans, such as language teachers and experts, should perform is to answer learners’ grammar-related questions. They will also contribute to the development of specialized AI capable of answering grammar-related questions, enabling AI to fulfill this role for learners in the future. For the future prospects of this research, more expert opinions on the questions surrounding “mer-” would be needed.

In the future, foreign language learners, even if they are studying with the limited availability of learning materials and foreign language classes in their own country, will be better able to enjoy their language exploration with the combined help of generative AI, Internet searches, and experts.

REFERENCES


