

From Lookup to Output: Exploring Mobile Vocabulary Searches for Self-Expression in Multicultural Japanese Language Learning

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Abstract

Mobile dictionaries and translation tools provide learners with instant and extensive access to vocabulary, but their role in supporting searches for language production remains underexplored. This study examines output-oriented vocabulary searches, which may aid self-expression, without directly measuring learning outcomes. Using smartphone screen recordings, we collected 3,552 searches from 80 Japanese language learners in China, South Korea, and Vietnam. Each search was coded by purpose (comprehension or output) and depth (quick or in-depth). Only 14.2% were output-oriented, and most were quick and superficial, with little attention to nuances or contextual meaning. The findings reveal a paradox in mobile-assisted vocabulary learning: while access is widespread and inclusive, depth is limited. The study highlights the need for purposeful tool design and pedagogical scaffolding to foster more productive vocabulary engagement.

Keywords: Vocabulary lookup, smartphones, screen recording function, productive vocabulary

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Introduction

Vocabulary lookup is the foundation of language learning, and mobile technology has made this process much more efficient. Devices such as dictionary apps in smartphones, and search engines provide low-cost, easily accessible, and instant ways to look up the meanings and usage of words.

While these tools can effectively support vocabulary learning focused on comprehension (Wang & Stockwell 2024; Lai & Wang 2025), their role in improving learners' productive vocabulary is less clear. In this study, the focus is on vocabulary search behavior rather than on the direct assessment of learning outcomes. And productive vocabulary refers to the ability to actively select and use words and expressions to convey intended meanings in speaking and writing, which we define as the self-expression purpose. Lai and Wang (2025) emphasize that the purpose of media use has a significant influence on vocabulary learning. Also, differences in learners' cultural backgrounds, educational systems, and information and communication technology (ICT) environments may also influence their vocabulary search behavior.

This study aims to examine how learners in different educational and cultural contexts use mobile tools to search for vocabulary for the purpose of self-expression, and how such search behaviors vary across contexts. It also considers the pedagogical implications for designing instructional strategies that help learners move from simple words lookup to meaningful and accurate use of vocabulary in mobile-assisted language learning.

Vocabulary Lookup and Language Output

Vocabulary lookup primarily serves two purposes: comprehension (input side) and language production (output side). Prior studies have shown that dictionary tools effectively support input-oriented vocabulary search, such as memorizing words, reading and extracting vocabulary, looking up definitions, and even creating personal dictionaries (Chen, 2010; Levy & Steel, 2015). However, output-oriented search, which supports learners in finding and applying words for speaking or writing, requires more complex processing and often deeper engagement with usage contexts (Laufer & Nation 1995; Dell et al., 1999). However, search that supports expressive abilities faces greater challenges in practice due to individual differences in linguistic competence, digital literacy, and metacognitive strategies.

To explore the above situation and issues from some basic perspectives, this study proposes the following research questions:

- RQ1: To what degree do Japanese language learners use mobile tools for output-oriented vocabulary search?
- RQ2: What differences exist in the behaviors of learners from different educational and cultural backgrounds (e.g., China, South Korea, Vietnam) when using mobile tools for output-oriented vocabulary search?

Methods

Participants

The study participants included 80 Japanese language learners from China ($n = 48$), South Korea ($n = 22$), and Vietnam ($n = 10$), regions that differ significantly in terms of cultural background, education systems, and ICT infrastructure. The learners' Japanese proficiency levels ranged from beginner to upper-intermediate, but all had the habit and basic skills of using mobile devices to look up words.

Data Collection and Analysis

Participants used the screen recording function of their smartphones to document their vocabulary search behavior over approximately one week, resulting in a total of 3,552 search instances. Of these, 3,427 searches were conducted via mobile tools, categorized as follows: Dictionary apps and online dictionaries: 2,486 searches, educational websites (e.g., vocabulary lists, Q&A sites): 131 searches, general search engines: 233 searches, machine translation tools (e.g., Google Translate): 141 searches, electronic dictionaries (non-smartphone): 469 searches, various combinations of mobile tools: 92 searches. Additionally, participants recorded the vocabulary items searched, the reasons and context for the search, the purpose (understanding or output), and their self-assessment in supplementary text records.

Although the number of participants from the three countries was unbalanced, the total number of searches recorded was relatively similar: China (1,583 searches), South Korea (824 searches) and Vietnam (1,020 searches). This to some extent reduced the impact of participant imbalance on cross-national comparisons.

Based on the above data, we coded each search behavior using the following two-level criteria. First level: Purpose (input-oriented vs. output-oriented); Second level: In output-oriented contexts, conducting "deep searches" (Li 2024) for specific scenarios. Specifically, this involves an in-depth analysis of usage contexts and nuances, including collocations, example sentences, idioms, common contexts, comparisons with the native language, and exploration of

hidden meanings and related concepts in Japanese culture, as well as efforts to complete and improve self-expression. The data was further analyzed through comparisons with different countries, tool types, and search objectives to identify trends and differences.

Ethical Considerations

The use of screen recording raises significant ethical issues regarding the protection of personal privacy. All data was obtained with informed consent, allowing students to withdraw their videos at any time and ensuring that this would not affect their grades. NINJAL ensures the security of uploaded data and deletes any content that accidentally captures personal information. All public videos are reviewed by participants.

Findings and Discussion

In response to RQ1, the data showed that out of 3,427 vocabulary searches recorded, only 488 (14.2%) were output-oriented, while the remaining 2,770 vocabulary searches were input-oriented (the remainder included cases that were unclear). This suggests that Japanese learners frequently prioritized simplicity and speed, completing quick translation lookups without additional investigation of usage or context.

In response to RQ2, significant cross-regional differences emerged. Chinese learners conducted the most output-oriented searches (324 out of 1,583 vocabulary searches, or 20.5%), followed by Korean learners (153 out of 824 vocabulary searches, or 18.6%). In comparison, only 11 (1.1%) of the 1,020 queries conducted by Vietnamese learners were output oriented. These differences may reflect differences in curriculum focus, pedagogical practices, and ICT familiarity. Chinese and Korean learners may use their familiarity with Chinese characters to directly infer the meaning of words from their orthography, which may affect their search objectives and strategies. In some cases, these learners only search for pronunciations (e.g., to confirm on-yomi or kun-yomi) or to verify the approximate meaning of Chinese characters they already know, which differs from Vietnamese learners, who typically need to search for character forms, meanings, and usage.

The above findings suggest that while certain tools (such as search engines and machine translation) can provide rich contextual data, learners rarely utilize them to support self-expression. Most output-oriented searches focus on vocabulary usage, collocation, and idioms, but few involve in-depth searches considering discourse nuances or contextual sensitivity. It is important to note that this study examines search behavior as an observable activity and

does not measure whether actual vocabulary learning or retention took place. Objectively, we have the technological conditions to support self-expression, but we do not see the results. As mentioned by Wang and Stockwell (2024), mobile tools can provide inclusive access, but without pedagogical guidance or training, they cannot promote equitable or transformative language learning outcomes.

Limitations and Future Studies

This study has several limitations, including an imbalance in participant numbers across the three countries, which means that the overall results may reflect the behavior of Chinese participants more strongly and may be less representative of learners from Vietnam. Individual differences in digital literacy, language proficiency, and learning motivation were not fully controlled. Despite these constraints, the study provides evidence about output-oriented vocabulary searches in mobile learning contexts. Future research should explore how to support more equitable and effective output-oriented vocabulary learning during the searching phase to meet the diverse needs of learners.

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