

A Multi-Case Study of the Mobile-Assisted Dictionary in the Incidental Vocabulary Learning of Chinese EFL Learners

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Abstract

With the growth of mobile technologies in educational settings, mobile-assisted language learning (MALL) has received considerable attention, particularly in the area of vocabulary acquisition. Among the various tools available, mobile-assisted dictionaries offer accessible and context-sensitive support for learners, enabling them to engage with new vocabulary during reading and listening activities. Although vocabulary learning can occur incidentally through exposure to language input, the extent to which mobile-assisted dictionaries enhance this process remains underexplored, especially among Chinese learners of English as a Foreign Language (EFL). This study investigated the incidental second language (L2) vocabulary learning process of four Chinese EFL learners using a mobile-assisted dictionary. These dictionaries have become a popular resource for L2 learning and reference. The research employed a quasi-experimental design to collect both qualitative and quantitative data, which included: (1) vocabulary assessments; (2) a reading comprehension exercise using a bilingual mobile dictionary; (3) a self-report questionnaire; and (4) a semi-structured interview with all participants. The findings indicate that when used appropriately, mobile-assisted dictionaries can enhance learners' incidental vocabulary acquisition.

Keywords: MALL, Incidental Vocabulary Learning, Second Language Acquisition, EFL Learners

Introduction

The mastery of vocabulary is essential for effective communication and the acquisition of a second language (Schmitt, 2000). A considerable number of scholars, including Oxford (1990), consider vocabulary knowledge to be the most significant and complex aspect of language acquisition. Unlike syntax and phonology, there are no explicit vocabulary guidelines available for learners to follow in order to improve their vocabulary proficiency (Alqahtani, 2015).

In the realm of English language education in China, incidental vocabulary learning is essential in enhancing formal instruction and mitigating the shortcomings of conventional vocabulary teaching approaches (Laufer, 2003; Nation, 2001). Due to the exam-centric characteristics of China's English education system, vocabulary instruction frequently prioritizes rote memorization and isolated item acquisition, thus impeding long-term retention and contextual language application (Fu, 2008). Incidental vocabulary acquisition, which transpires as a secondary effect of interacting with significant input like reading, listening, or multimedia resources, provides a more organic and cognitively efficient method for vocabulary enhancement (Hulstijn, 2001; Webb & Nation, 2017). This exposure not only improves vocabulary acquisition in context but also promotes learner autonomy, motivation, and engagement, which are crucial for ongoing language development in EFL environments such as China (Qian, 2004; Webb & Nation, 2017).

Dictionaries serve as essential resources for learners to comprehend unfamiliar vocabulary in a foreign language, a function that online dictionary applications have significantly improved. Digital resources have gained popularity and student usage has risen in recent years (Cassidy, E. D, 2014). Most Chinese EFL learners are equipped with touch-screen smartphones and have experience in using MALL (mobile-assisted language learning) resources (Han & Chen, 2024). As one of the most commonly used MALL applications, mobile dictionaries enable learners to look up words across different learning contexts, offering affordances for EFL learners' L2 vocabulary acquisition. Nevertheless, many learners are still deficient in using the technologies (Conole & Pérez-Paredes, 2017). More attention should be given to students' use of strategies in their informal mobile learning (Boroughani, Behshad, & Xodabande, I, 2023).

This study particularly focuses on the use and effectiveness of mobile-based dictionaries among four Chinese EFL learners in incidental vocabulary learning settings, aiming to offer some insights into vocabulary learning in informal contexts. This study seeks to enhance the understanding of mobile dictionaries in the context of EFL learners' L2 vocabulary acquisition by addressing two research questions:

1. What are the methods employed by Chinese EFL learners in utilizing mobile dictionaries within incidental contexts of English vocabulary acquisition?
2. What are the potential benefits of mobile dictionaries for Chinese EFL learners in incidental English vocabulary acquisition?

Literature Review

Acquisition of Second Language Vocabulary

Vocabulary acquisition can take place through both deliberate effort and incidental exposure. Hulstijn (2003) defines intentional vocabulary learning as the conscious memorization of words, often paired with their grammatical features, through various instructional strategies. In contrast, incidental learning refers to the acquisition of vocabulary that occurs as a by-product of engaging in activities where language learning is not the primary objective (Laufer & Hulstijn, 2001), such as participating in meaning-focused communication tasks (Ma, 2009). Empirical research has confirmed the potential of incidental learning in promoting vocabulary growth (e.g., Day, Omura, & Hiramatsu, 1991). However, critics argue that such learning may result in lower retention rates. They emphasize the value

of explicit vocabulary instruction, particularly highlighting the role of frequency of exposure in supporting long-term retention (e.g., Nation, 2001; Webb, 2007).

Mobile-assisted Vocabulary Learning (MAVL)

Mobile-Assisted Vocabulary Learning (MAVL) has emerged as a crucial component of language instruction, providing learners with adaptable, contextually enriched settings for vocabulary acquisition. As smartphones and mobile applications proliferate, learners are increasingly relying on mobile resources to supplement vocabulary acquisition both within and beyond the classroom. Mobile dictionaries are pivotal among these tools owing to their accessibility, multimodal functionalities, and effectiveness in delivering definitions, pronunciations, and illustrative sentences (Chen, 2010; Stockwell, 2010).

Prior research has shown the benefits of Mobile-Assisted Language Learning (MALL) resources in facilitating vocabulary acquisition. Mobile tools such as dictionary applications, flashcard systems, and gamified platforms provide learners with immediate access to lexical information, enhance repetitive exposure, and support both intentional and incidental learning (Stockwell, 2010; Burston, 2015). MALL resources promote learner autonomy by enabling users to regulate the pace, timing, and context of their learning (Kukulska-Hulme, 2012). Mobile dictionaries enhance vocabulary retention through the provision of rich multimodal input, including pronunciation audio, example sentences, and usage notes (Chen, 2010). Furthermore, learners frequently indicate heightened motivation and engagement when utilizing mobile platforms, particularly when learning is incorporated into genuine, real-world contexts (Viberg & Grönlund, 2013).

However, research also indicates that access to mobile tools alone does not ensure effective learning; instead, learner behaviors, strategies, and digital literacy are essential factors (Stockwell, 2010; Kukulska-Hulme & Shield, 2008). Mobile dictionaries can facilitate extensive vocabulary acquisition via features like example sentences, pronunciation guides, and thesaurus functions; however, research shows that many learners restrict their use to fundamental word look-up capabilities (Laufer & Hill, 2000). Chen (2010) found that electronic dictionaries can enhance receptive and productive vocabulary knowledge, but this potential is realized only when learners actively engage with the tools' advanced functionalities. Additionally, issues associated with MALL applications, such as system crashes, errors, and prolonged loading times (Chen, 2011), may adversely impact user experience and deter usage of the applications.

The recent systematic review by Lin and Lin (2019) on mobile-assisted vocabulary learning (MAVL) identifies two primary research areas: (1) vocabulary acquisition through short message services (SMS) and multimedia message service (MMS), and (2) mobile applications. These areas are examined from behaviorist, cognitivist, situated learning theory, and (social) constructivist viewpoints. This systematic review highlights that limited prior research has concentrated on the use of mobile dictionaries in learners' L2 vocabulary acquisition in incidental contexts.

Vocabulary Learning Strategies (VLS)

Vocabulary Learning Strategies (VLS) have been analyzed through multiple theoretical perspectives, highlighting the intricate and diverse aspects of vocabulary acquisition. Schmitt

(1997) categorized VLS into two main types: discovery strategies, which pertain to the initial acquisition of a word, and consolidation strategies, which facilitate the retention and retrieval of vocabulary. The use of dictionaries, especially when learners face unfamiliar words in reading or listening, serves as a common discovery strategy and has been acknowledged as a fundamental aspect of direct vocabulary acquisition (Grabe & Stoller, 2011).

Dictionaries provide essential lexical support; however, their effectiveness is significantly influenced by learners' skills in navigating entries and accurately interpreting word meanings. Tono (2001) emphasized that utilizing a dictionary is a cognitively intensive task that necessitates language proficiency alongside information processing, decision-making, and problem-solving skills. Chen (2010) indicated that ineffective dictionary use may arise from learners' difficulty in identifying relevant meanings of polysemous words, particularly when multiple definitions are available. Nesi and Tan (2011) asserted that effective dictionary consultation is a strategic process that entails the selection of relevant information and its meaningful application within the learning environment.

Utilization of Dictionaries and Vocabulary Learning

EFL learners in China employ dictionaries in several manners to enhance their language acquisition, especially in vocabulary development, reading comprehension, and writing proficiency. Research consistently indicates that both bilingualized and monolingual dictionaries are often utilized; nonetheless, learners typically exhibit a pronounced preference for bilingualized dictionaries owing to their perceived clarity and efficiency (Laufer & Hadar, 1997; Chen, 2010). Research indicates a differentiation in dictionary utilization across linguistic tasks: reading activities may prompt more frequent consultations for meaning identification, whereas writing tasks may necessitate verification of word collocations, spelling, or suitability of word usage (Prichard, 2008; Cao & Deignan, 2019). Moreover, the utilization of print vs electronic dictionaries has been a substantial focus of research. Recent studies reveal an increasing inclination towards the utilization of mobile and electronic dictionaries, particularly among university students, attributed to their portability, efficiency, and multimedia capabilities (Li & Xu, 2020).

Nevertheless, several researchers contend that, notwithstanding the benefits of electronic dictionaries, learners may inadequately exploit advanced functionalities such as pronunciation assistance, illustrative sentences, and thesaurus resources, frequently restricting their usage to fundamental word searches (Laufer & Hill, 2000). The findings indicate that the dictionary usage of Chinese EFL learners is affected by factors including task type, dictionary type, language proficiency, and perceived usefulness, underscoring the necessity for additional research on how technological affordances influence dictionary utilization strategies in modern language learning environments. Nevertheless, limited prior research has examined the experiences of Chinese EFL learners with mobile dictionary usage and its effectiveness in vocabulary acquisition.

Methodology

The study applied a multiple case study (Duff, 2014) to investigate the utilization of mobile dictionaries by four Chinese EFL learners for incidental English vocabulary acquisition. A multiple-case study design was employed in this research as it offers concrete examples of individuals in authentic contexts, facilitating a clearer understanding of concepts than

abstract theories alone (Cohen et al., 2013, p. 253). Additionally, it enhances generalizability in comparison to a single-case design. Four Chinese EFL learners (Amelia, Herny, Sofia, and William) were invited to participate in the study. All participants were first-year undergraduates with approximately ten years of English learning experience at a Chinese university. Amelia and William are pursuing studies in English language education, while Sofia and Henry are majoring in computer science. Based on their Oxford Placement Test scores, all individuals are classified at the B2 level of the Common European Framework for Reference (CEFR).

Figure 1 depicts the entire data collection process. The four participants initially completed a pre-vocabulary test to establish a baseline of their vocabulary knowledge before the intervention. Subsequently, two reading passages were provided, chosen for their relevance to the target vocabulary items. Each passage included 20 reading comprehension questions to ensure meaningful engagement with the content and to create a context-rich environment for vocabulary acquisition.

In the reading phase, participants were permitted to utilize the bilingualized mobile dictionary, Longman Dictionary of Contemporary English, which was installed on their personal smartphones. Following the completion of the reading tasks, participants were unexpectedly given a post-vocabulary test. The immediate post-test aimed to evaluate short-term vocabulary retention without allowing participants time for deliberate study or review of the words. A self-report questionnaire was administered to collect qualitative and quantitative data on dictionary use patterns, including frequency of look-up, types of information consulted (e.g., meaning, usage, pronunciation), and perceived helpfulness. Two weeks later, participants returned to undertake a delayed post-vocabulary test. This delayed test sought to assess the degree of long-term vocabulary retention and to identify alterations in retention patterns over time. All assessments and surveys were administered using Wenjuanxing.

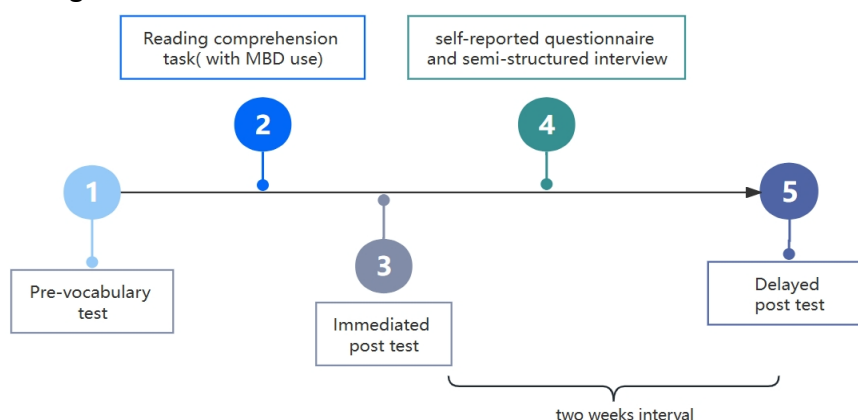


Figure 1 Data collection process

Data Collection

Two readings were chosen from Cambridge English: Advanced (CAE) containing 20 matching questions. The two essays, titled 'Introduction to a Book about the History of Colour' and 'The Architecture of Happiness', are intimately connected to participants' everyday experiences. While no time limit was imposed on participants to complete the reading tasks to maintain the "naturalness" of reading circumstances (Ding, 2015), they were encouraged

to conclude the work within one hour. The two readings had about 94% K-3 words and 96% K-5 words, which were appropriate yet difficult enough for the learner's incidental vocabulary acquisition. Twelve target words were selected from the K-7-word list or higher using the VocabProfile section of the Compleat Lexical Tutor, with the intention that these words would be unfamiliar to the learners.

Concerning the vocabulary assessments, each of the four tests comprises: (1) a spelling recognition assessment, (2) a Vocabulary Knowledge Scale (VKS)-based test evaluating meaning, usage, and part of speech (POS) (Wesche & Paribakht, 1996), and (3) a pronunciation assessment. The primary structure of the tests remained consistent; however, the sequence of questions was altered to mitigate the carryover effect from the preceding test (Chen, 2011). The minor distinctions between the tests are as follows: (1) The pre-test included 10 additional words at the K-5 level or above as distractors; (2) The delayed post-test contained an extra question enquiring whether participants had learnt the word during the two-week interval. Additionally, two self-report questionnaires were developed to gather self-report data, prompting participants to indicate whether they searched for the target word and which aspect they concentrated on. The semi-structured interviews primarily investigated the reasons for the increased attention given to specific words and aspects.

Data Analysis

Quantitative data obtained from the self-report questionnaires and the vocabulary tests (pre- and post-test) were examined using descriptive statistical methods. For the qualitative data collected through interviews, the analysis was conducted with the assistance of MAXQDA Plus software. The thematic analysis method was employed for the identification, analysis, and reporting of patterns within the data (Braun & Clarke, 2006, p.6). Following the six stages of thematic analysis outlined by O'Leary (2014), the first author reviewed all transcripts, applied coding, and organized them into themes utilizing the open-coding method as described by Rivas (2012). The second author analyzed and delineated the themes while evaluating the preliminary findings. We conducted a thorough verification of the reliability and preciseness of the information, themes, and results.

Findings

The Utilization of Mobile-based Dictionaries by Learners

Self-report data revealed notable individual differences in the frequency and methods of mobile dictionary usage among the four participants. Table 1 summarises participants' usage of mobile dictionaries during reading. Amelia and Henry were the most frequent users, performing 12 and 11 look-ups, respectively. Both indicated that during the reading task, they consulted the dictionary by prioritizing Chinese definitions exclusively and focusing primarily on examining a single definition, particularly the initial one. Meanwhile, Amelia's focus on word meaning in two languages differed slightly from Frank's: she considered the Chinese translations of nine target words and four in both Chinese and English, whereas Henry exclusively read the Chinese translations. Henry rarely seeks additional information, whereas Amelia reviewed seven parts of speech, six example sentences, two words' pronunciations and spelling.

Conversely, the other two participants, Sofia and William, infrequently utilized the mobile dictionary. William failed to research any of the 12 target words, while Sofia examined

only one. Sofia also neglected to focus on word meanings and example sentences during a reading comprehension task, elements that are considered essential for understanding text.

Table 1

Use of mobile dictionaries in reading

Student Name	Sex	Look up	Meaning									Part of Speech	Example sentences	Spelling	Pronunciation	other aspects
			Yes/No	No. of meaning				First	Language							
				1	2	3	≥3		Chinese	English	Both					
Amelia	F	12	Yes	11	3	0	0	9	9	0	4	7	6	2	2	2
Henry	M	11	Yes	11	1	0	0	11	11	0	0	2	2	1	1	0
Sofia	F	1	No	0	0	0	0	0	0	0	0	0	0	0	1	0
William	M	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0

The answers they provided from the semi-structured interview elucidate their dictionary usage behaviors.

a. Amelia: A mobile dictionary functions as an educational source.

Amelia regularly consulted the dictionary to clarify the meanings of unfamiliar words. During the interview, she articulated that her emphasis was on word definition. She selected Chinese translations (L1) due to their utility in facilitating her rapid comprehension of the word. She emphasized the significance of word spelling, example sentences, parts of speech, and pronunciation, recognizing that these elements are essential for vocabulary acquisition. She consulted the dictionary not only to grasp the meaning of words in the text but also to attain a comprehensive understanding of them.

b. Henry: A mobile dictionary functions as a reference resource.

Henry examined 11 target words, focusing primarily on their meaning, especially the primary definition. The initial definition is the most frequently employed and is likely to align with the reading context. Henry's preference for Chinese translation was akin to Amelia's, as it stemmed from his familiarity with the language. Due to the time-consuming nature of reviewing all information in the word entry, he typically disregarded additional details while completing reading comprehension exercises.

Sofia: A mobile dictionary functions as a supplementary resource.

Sofia opted to infer word meanings directly from the reading. She discussed her guessing strategy during the interview, noting that it was occasionally unnecessary to understand the precise meaning of the word. Alternatively, deriving a general understanding of the word from the context sufficed to address the reading comprehension questions. A mobile dictionary served merely as an auxiliary resource for her when additional information was required.

William: A mobile dictionary serves as an interrupter.

Like Sofia, William preferred to infer word meanings from the reading context. He exhibited confidence in his ability to guess meanings and expressed dissatisfaction with the interruptions caused by consulting the dictionary during her reading. He explained that because reading tasks were typically paper-based, he had to shift his gaze to his mobile phone, type the word, locate the appropriate definition, and return to reading. He occasionally forgot what he had read after utilizing the mobile dictionary, necessitating a

reread of the preceding sentences, which proved time-consuming and imposed cognitive burdens.

The Efficacy of Mobile-based Dictionary in the Short Term

Table 2 displays the pre- and immediate post-vocabulary test scores of four individuals, along with their short-term retention results. Amelia, who extensively utilized the mobile dictionary while reading, excelled in the immediate post-test and showed significant advancement in all three areas (score difference = 45 for spelling, score difference = 73 for meaning and usage, score difference = 22 for pronunciation). In contrast, Henry, who concentrated on the primary and Chinese meaning, greatly improved spelling (score difference = 45) but exhibited minimal advancement in meaning and usage (score difference = 37) and pronunciation (score difference = 3). Conversely, no substantial advancement was observed in Sofia's and William's vocabulary test scores, although Sofia exhibited modest improvement in pronunciation (score difference = 18). The results suggest that the active and effective utilization of a mobile dictionary enhances accidental vocabulary acquisition in the short term.

Table 2

Learners' pre- and immediate post-test score and short-term retention

Student Name	Pre-test score				Immediate post-test score				retention score			
	Spelling	Meaning and use	Pronunciation	Overall	Spelling	Meaning and use	Pronunciation	Overall	Spelling	Meaning and use	Pronunciation	Overall
Amelia	30	32	60	122	75	105	82	262	45	73	22	140
Henry	25	26	49	100	70	63	52	185	45	37	3	85
Sofia	28	28	51	107	35	30	69	134	7	2	18	27
William	31	30	43	104	31	30	44	105	0	0	1	1

The Efficacy of Mobile-based Dictionary in the Long Term

Participants reported their prior knowledge of the 12 target words before responding to the questions in the delayed post-test. The results were refined and are presented in Table 3. Students' delayed post-test scores are generally lower than their immediate post-test scores, indicating a decline in incidental vocabulary retention over time. Amelia and Henry outperformed Sofia and William in the delayed post-test, demonstrating superior long-term retention, particularly in spelling, meaning, and usage. The results indicated that the use of mobile dictionaries may enhance long-term vocabulary retention; however, the effectiveness is contingent upon the extent and strategy of usage by learners.

Table 3

Learners' pre- and immediate post-test scores and short-term retention

Student Name	Pre-test score				Delayed post-test score				retention score			
	Spelling	Meaning and use	Pronunciation	Overall	Spelling	Meaning and use	Pronunciation	Overall	Spelling	Meaning and use	Pronunciation	Overall
Amelia	30	32	60	122	68	90	67	225	38	58	7	103
Henry	25	26	49	100	62	55	49	166	37	29	0	66
Sofia	28	28	51	107	30	29	53	112	2	1	2	5
William	31	30	43	104	31	30	44	105	0	0	1	1

Discussion

The efficacy of a dictionary, particularly a print dictionary, in incidental vocabulary acquisition has been investigated and empirically substantiated by several researchers, including Lupescu and Day (1993), Knight (1994) and Hulstijn, Hollander, and Greidanus (1996). The current study corroborates prior findings that consulting a dictionary enhances language retention for learners.

Furthermore, we reported that the two learners who actively utilized the mobile dictionary (Amelia and Henry) surpassed the other two learners who opted to infer the word meanings (Sofia and William). The involvement load theory, introduced by Laufer and Hulstijn (2001), may offer theoretical insights into this observation. The concept delineates several critical aspects in incidental vocabulary acquisition, spanning from motivational to cognitive dimensions. They contended that the retention of words acquired incidentally is contingent, emphasizing three factors—need, search, and evaluation—as primary elements of involvement. The need component, from a motivational standpoint, pertains to a learner's drive to succeed. Search entails the endeavor to identify the form of the L2 word that signifies a concept or to ascertain the word's meaning. Evaluation entails a process of comparing words and their meanings to identify the most appropriate term or meaning within a certain situation.

Laufer and Hulstijn (2001) empirically validated their hypothesis that words engaged with a greater engagement load may be maintained more effectively. Laufer and Hulstijn (2001) assert that need is moderate when dictated by external variables, such as educators and assignments, denoted as +. The effectiveness increases when learners are inclined to utilize the dictionary (shown as ++). The necessity for assessment is contingent upon the requirement to compare several interpretations of a word (denoted as +) and the presence of a productive task (e.g., constructing sentences, indicated as ++). Table 4 delineates the four individual index associated with dictionary usage and guessing in this investigation, revealing a greater involvement burden in the utilization of a dictionary. This study demonstrated that the instances of Amelia and Henry supported the active utilization of a mobile dictionary, which, with increased cognitive engagement, might enhance their word memory.

Table 4

The involvement load index of individuals

Strategy	Student name	Need	Search	Evaluation	Involvement index
Using mobile-assisted dictionary	Amelia	+imposed by reading task ++imposed by learner	+	++with comparison and productive output	2-5
	Henry	+imposed by reading task ++imposed by learner	+	-without comparison	
Guessing	Sofia	+imposed by reading task ++imposed by learner	-	-	1-2
	William	+imposed by reading task ++imposed by learner	-	-	

Additionally, from the perspective of the Level of Processing (LoP) theory (Craik & Lockhart, 1972), learner interaction with electronic dictionaries can significantly affect the depth of vocabulary processing and, as a result, retention. This theory asserts that information processed at a deeper semantic level is more likely to be retained compared to information processed at a superficial structural level. This study demonstrates that the learner (Amelia) who engaged with various features of the mobile dictionary—such as checking definitions, example sentences, word usage, and pronunciation—likely achieved deeper processing levels compared to Henry, who depended exclusively on surface-level information like L1 translations. Amelia examined example sentences with accessed meaning while also processing syntactic and pragmatic usage, which facilitated elaborative encoding. Conversely, Henry (e.g., consulting only one L1 definition) may indicate superficial processing, which is

less favourable for long-term retention. These findings indicate that the effectiveness of mobile dictionary use in incidental vocabulary learning is influenced not only by usage frequency but also by how learners engage with lexical information, thereby supporting the assertion that deeper engagement results in more lasting vocabulary acquisition.

Conclusion

This study examined the vocabulary learning of four Chinese EFL learners across different contexts, focusing on their use of a mobile dictionary during reading and evaluating the effectiveness of the mobile dictionary in incidental learning settings. The results indicate that Amelia and HERNY, who favored the mobile dictionary, demonstrated greater progress compared to the other two participants, Sofia and William. Amelia, who utilized the dictionary most effectively and viewed it as a learning tool, demonstrated the most significant progress. This study confirmed the advantages of a mobile dictionary in facilitating incidental vocabulary acquisition among learners; however, its effectiveness largely depends on the manner and extent of dictionary usage by the learners. The results theoretically support the involvement load hypothesis (Laufer & Hulstijn, 2001) and the depth of processing framework (Craik & Lockhart, 1972) to some extent. Despite its limited sample size, this study serves as an initial exploration into the effectiveness of a mobile-assisted dictionary for L2 vocabulary acquisition.

Further research is necessary to investigate this topic with a larger cohort of learners, teachers are advised to prioritize the efficient and effective implementation of incidental vocabulary learning within and beyond the classroom. Governments and universities must prioritize the provision of adequate digital multimodal resources and training for teachers, particularly in less developed areas, to enhance their use of technology across various teaching contexts (Zhang, 2019). Self-regulation significantly influences non-formal, self-directed L2 vocabulary acquisition. Therefore, learners should strive to enhance their vocabulary learning strategies through technological and pedagogical support tailored to various language learning objectives.

Contribution of Study

This research provides significant theoretical and contextual insights into second language acquisition and mobile-assisted language learning (MALL). This study enhances current research on vocabulary acquisition by integrating and empirically applying the Involvement Load Hypothesis (Laufer & Hulstijn, 2001) and the Depth of Processing framework (Craik & Lockhart, 1972) in a mobile-assisted learning environment. This study investigates the impact of varying degrees of cognitive engagement with mobile dictionary features on both short- and long-term vocabulary retention, thereby enhancing our comprehension of the mechanisms involved in incidental vocabulary learning. This study enhances research on vocabulary learning strategies by demonstrating how learners' strategic behaviors, including the preference for L1 definitions over multimodal dictionary entries, affect the depth of lexical processing and subsequent learning outcomes.

This research addresses the sociolinguistic and pedagogical contexts of Chinese EFL learners, highlighting the constraints of exam-oriented curricula and the dependence on rote memorization in vocabulary instruction. The study highlights the role of mobile dictionaries in informal learning environments beyond the conventional classroom, demonstrating their

effectiveness as accessible, learner-directed resources that facilitate incidental vocabulary acquisition. The findings indicate varied learner perspectives on mobile dictionary usage, from its role as an active learning tool to its potential as a disruptive factor, providing valuable insights for EFL educators, policymakers, and app developers. This study expands theoretical discourse while addressing the contextual needs of learners engaged in English acquisition within test-driven and technologically evolving educational environments.

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