

A Study of Impacts of Audiovisual Input Modes on Incidental Vocabulary Acquisition in Second Language Learning

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Abstract

This literature review aims to analyze previous studies exploring the impact of audiovisual input modes on incidental vocabulary learning in second language acquisition. The articles included in this literature review look into the combination of language modalities, subtitle presentation modes, and the diversity of video types that affect incidental vocabulary learning. The findings show that L2 learners develop much of their vocabulary by incidental means through exposure to words in audiovisual contexts. Moreover, this exposure is promoted by viewing and enhanced through multimodal glosses. Further research may focus on leveraging AI-powered language learning apps to enhance listening for higher lexical retention rates, investigating the application scenarios of AI-driven video analysis tools in uncovering the circumstances that allow incidental learning of multi-word phrases and collocations and exploring the integration of AI technologies such as machine translation and speech recognition in the use of technology-based methods for incidental vocabulary acquisition.

Keywords

Audiovisual Input Modes, Incidental Vocabulary Learning, Multimodal Glosses, Second Language Acquisition, AI Technologies in Language Learning.

1. Introduction

Second language learning largely depends on vocabulary, as the building blocks from which learners start their second language (L2) acquisition. Hence, its significance lies inherently deep within the first stages of the acquisition of any language[4]. In the past decade, the landscape of second language learning has been significantly transformed by the rapid integration of AI technology. With AI-powered technologies, the effectiveness of L2 vocabulary learning has become of great research interest. Much research has advocated that vocabulary in audiovisual contexts is a key aspect of second language acquisition, especially in its incidental learning. These studies have pointed out the importance of vocabulary learning as an ancillary outcome of the instructional focus on audiovisual input modalities. This focus underscores the pivotal role of modality-a critical factor in the learning process, refers to the human capacity to perceive through the senses, such as sight and hearing, and to engage with the external environment, including interactions with people, objects, and animals[9]. this literature review aims to analyze previous studies that explore the impact of audiovisual modalities on incidental vocabulary learning from the perspective of second language acquisition. Research has shown that learners can acquire incidental vocabulary by watching movies[3]. Due to growing popularity of new technologies and applications, numerous researchers and practitioners have investigated and employed Augmented reality (AR) technology as a virtual-real learning environment for L2 vocabulary teaching and learning[34]. Moreover, researchers seem to agree that a considerable amount of vocabulary is learned receptively through listening or

reading[10]. In this sense, a learner would learn vocabulary as a by-product of audiovisual input modes, out of the boundaries of the pedagogical focus of the instructional setting.

However, building on the role of modality, incidental vocabulary learning is not completely understood in terms of how it actually occurs when assisted by enhanced audiovisual input, given the fact that there are a number of factors that determine the success of a learner in inferring word meanings, such as exposure levels, word-guessing strategies, and the quality of the contextual support for lexical inference activities. Many theories have tried to account for the specific mechanisms behind this type of acquisition. It seems, however, that it depends on the type of cognitive process in which the learner is engaged. Krashen, in his input hypothesis, argues that incidental acquisition of vocabulary takes place naturally by providing the learner with comprehensible input[17], of which audio-visual materials, especially TV series, can promote the incidental acquisition of vocabulary, in which occurrence frequency and cognitive relevance are important factors affecting learning outcomes. Moreover, using images and subtitles on the screen can further enhance learning outcomes, especially for intermediate learners. Thomas Huckin and James Coady further elaborate on the process of lexical inference, that is, by using all the available language clues in the text as well as the reader's world knowledge, language knowledge, and his/her understanding of the context to guess the meanings of unknown words[13]. Janice E. Horohov and Janna B. Oetting explored the influence of input variables on children's vocabulary learning abilities. These variables include presentation rate, sentence complexity, word types, etc. At the same time, the study also found that different language environments and learning conditions would affect children's vocabulary learning differently. For example, in natural reading, factors such as text difficulty and word occurrence frequency might impact vocabulary learning[14]. Ali Shahrzad and Ali Derakhshan provide insights into the cognitive effects on learners when they repeatedly encounter words in the text, indicating that repeated encounters with words can promote learners' inference and memory of word meanings[26]. Steven Dessenberger, Kelly Wang, Evan Jordan, and Mitchell Sommers provide insights indicating that lexical inferencing involves using the language clues available in the text and other key points to guess the meanings of unfamiliar words, and this process uses "familiar attributes and context" to distinguish the unfamiliar elements in reading[28]. The above research results mainly include audiovisual modalities for accomplishing this acquisition. Furthermore, the frequency of vocabulary exposure in context has significantly incidental vocabulary learning since repeated exposure to words in meaningful collocations is the key to form-meaning associations.

In this literature review, I seek to analyze three main issues that stand out after reviewing the articles concerning incidental vocabulary learning. First, incidental vocabulary learning occurs through the modalities of audiovisual input through which learners can acquire vocabulary incidentally. Then, the effect of audiovisual input modes on incidental vocabulary learning is discussed as learners engage in vocabulary gains through mental comprehension. Next, the facilitators and obstacles in incidental vocabulary learning via audiovisual means will be discussed. Finally, insights into potential future research directions will be provided by reflecting on the current state of research to identify gaps and proposing innovative avenues for further exploration, with the overarching aim of advancing our understanding and optimizing incidental vocabulary learning within second language acquisition.

2. Review of Literature

The principle for structuring this paper hinges on three principal domains: (1) the occurrence of L2 incidental vocabulary learning through audiovisual means, (2) the effect of audiovisual modalities on incidental vocabulary learning, and (3) the AI Technologies in Language Learning conducive to improving the incidental learning of vocabulary. It is paramount to discuss

elemental issues that concern the understanding of incidental learning of vocabulary not only in its primary way of occurrence—reading but also by analyzing the strategies and tasks employed to promote the proper lexical knowledge for inference in learners for vocabulary acquisition in a second language.

2.1. Understanding Incidental Vocabulary Learning through Audiovisual Means

In 1987, Nagy and other scholars, building on their research into children's acquisition of vocabulary in their native language, were the first to introduce the concept of "incidental vocabulary acquisition". They believed most native language vocabulary is acquired incidentally rather than through deliberate learning. Some corresponding empirical studies have emerged since Nagy and others proposed this concept. Among them, there are more studies on college and adult learners' incidental acquisition of second language vocabulary through reading. For example, Mark Fengand and Atsushi studied the impact of metacognitive knowledge on vocabulary learning among English as a Foreign Language (EFL) learner [29]. Their research shed light on various aspects relevant to vocabulary acquisition, such as the mechanism of incidental acquisition, the type and size of vocabulary for correct guessing, the amount of exposure for successful retention, the effectiveness of word-guessing strategies, the influence of different reading texts, and the challenges associated with incidental learning. However, in the context of audiovisual input specifically, extensive enhanced input has been identified as a primary conduit for incidental learning, which was further explored by Falcon Dario Restrepo Ramos[4], who pointed out that several variables influence the success of incidental learning via audiovisual means. These variables chiefly include the appropriate context surrounding each word, the nature of the learners' attention, and the task demands, with text-based tasks playing a significant role in enhancing or modulating these factors. For instance, from the cognitive psychology perspective, Xu Hao employed the 'think-aloud' method to explore the attentional process of incidental vocabulary acquisition in reading tasks. The research shows that the closer the context cues are to the language input during the attentional process, the easier it is for learners to recognize the meaning of new words, and it also involves the influence of time pressure and context recognition[37]. Based on a meta-analysis of 46 empirical studies of experimental and control groups, scholars have clarified that, compared with the condition without attentional manipulation, the overall effect size of attentional manipulation on incidental vocabulary acquisition in a second language is more significant from the language acquisition mechanism perspective. At the same time, they have deeply explored the moderating effects of potential moderating variables on the learning-promoting effectiveness of attentional manipulation in incidental vocabulary acquisition in a second language. The research results fully demonstrate that attentional manipulation, as a means of implicit input enhancement, is indeed effective, and its applicability in vocabulary acquisition is far superior to that in grammar teaching, strongly supporting the input enhancement hypothesis[39]. Nagy W. E argues that "Learning from expositions is especially dependent on relationships among concepts being made clear, and it may take repeated exposure not just to the words but to the system of ideas in a new domain to produce a significant level of incidental learning"[23]. In order to correctly guess the meaning of a word in the context of audiovisual input, acquisition can occur through multiple exposures to the same lexical items within the audiovisual materials. Wang Yiyang and Xu Guiping's research posits that repetition is a fundamental factor in the consolidation of vocabulary knowledge[34]. For instance, in a video or audio clip where certain words are frequently used in different contexts, learners are likelier to notice and internalize those words, which aligns with the idea that incidental learning is enhanced when learners are repeatedly exposed to vocabulary in a meaningful and engaging context.

So far, the discussion has centered around manifold areas that delve into the mechanisms and conditions of incidental vocabulary learning, especially within audiovisual input modalities. These studies have illuminated the current understanding of how incidental learning occurs through various audiovisual sources, such as videos and audio recordings. They have also explored its relationship with intentional learning in L2 vocabulary acquisition and the role of form-focused instruction within this specific modality. By integrating the findings of these articles, it becomes evident that a hybrid approach, combining intentional and incidental learning strategies with a particular emphasis on leveraging the power of audiovisual input, holds the potential to address the limitations of exclusive incidental learning. This combined method could optimize L2 learners' vocabulary learning experiences and outcomes, providing a more comprehensive and effective path to vocabulary acquisition, as the rich and dynamic nature of audiovisual input can enhance learners' engagement and retention of new vocabulary items.

2.2. The Effectiveness of Audiovisual Input Modes for Incidental Vocabulary Learning

"Learning from expositions is especially dependent on relationships among concepts being made clear, and it may take repeated exposure not just to the words but to the system of ideas in a new domain to produce a significant level of incidental learning"[23]. "The systematic nature of educational video content can fulfill this demand. The video presents dual-channel information, consisting of voice and text, and students highly favor this information. The video is characterized by its variable length and rich diversity of information, providing multimedia exercises in listening, vocabulary, and reading"[15]. Video subtitles can provide various and multimodal chances for language utilization. Factors such as the existence or absence of subtitles, the order of subtitle appearance, the fullness or partialness of subtitle display, the font size and clarity of subtitles, and the lexical repetition rate of subtitles have distinct influences on learners' vocabulary, listening, and reading skills[15]. "In the teaching activities that rely on visual resources of teaching materials to promote thinking by looking, teachers can design multi-dimensional picture reading activities, dig deep into the thinking points of visual resources, expand the story plots of pictures and videos, and develop students' logical, critical and innovative thinking abilities"[5]. These contents suggest that the content of educational videos is systematic, capable of providing learners with a wide range of information and exercises to fulfill their learning requirements in listening, vocabulary, and reading.

The effectiveness of subtitles for incidental vocabulary learning was also investigated by Wang Andi and Pellicer-Sánchez[30]. The researchers explored how different subtitling conditions affected learners' vocabulary acquisition while watching videos. A total of 112 Chinese learners of English with high-intermediate to low-advanced proficiency participated in the study. They watched an English documentary clip under four conditions: bilingual subtitles, captions, L1 subtitles, and no subtitles. After viewing, they completed a comprehension test, and their eye movements were recorded. Regarding vocabulary learning, the results showed that bilingual subtitles were as beneficial as L1 subtitles, and both were more effective than captions, with no subtitles facilitating vocabulary understanding. Participants using bilingual subtitles spent significantly more time processing L1 than L2 lines. L1 lines in bilingual subtitles were processed significantly longer than in L1 subtitles, but L2 lines were processed significantly shorter than in captions. However, no significant relationship was found between the processing time and comprehension for bilingual subtitles' L1 or L2 lines. The impact of audiovisual input modalities on vocabulary development was also examined by Wu Huizhen et al[36]. Wu Huizhen and other researchers initiated an exploration of the strategies employed by 10 English learners while watching TED Talk videos and the influence of different subtitle models on vocabulary learning. They established four models for the experiment, namely

“English subtitles + highlighted keywords with Chinese paraphrasing,” “bilingual subtitles,” “bilingual subtitles + highlighted Chinese and English keywords,” and “no subtitles.” The researchers discovered variations in the vocabulary learning effects of different subtitle models, and this variation was associated with the English proficiency of the learners. Subsequently, they concluded that teachers should choose appropriate subtitle types based on students’ language abilities, thereby providing a scientific foundation for optimizing the utilization of video resources in English teaching[36]. Wang Dijian’s research outcomes demonstrate that in the context of video understanding, Chinese full subtitles manifest clear advantages and are most conducive to the overall perception[31]. As for vocabulary comprehension, English keyword subtitles assume the most crucial role. At the same time, keyword subtitles are linked to the language level and are more appropriate for students with a high level of language ability. Thanks to studies like this, there is heavy evidence of the effectiveness of subtitles in audiovisual input for vocabulary gains for the meaning of words and student’s nearest development area. However, as the study reveals, the keyword subtitles used in this study were manipulated in such a way as to make the problematic words appear easy to understand for learners. Such advantages are hard to find in authentic, natural texts. Nonetheless, it gives positive evidence for subtitles rich in contextual cues that enhance comprehensibility and inference as stated in Wang Andi and Pellicer Sanchez Ana’s study[30]. In another study, Incalcaterra McLoughlin and Lertola conducted a study on the role of subtitling in second language acquisition[18]. The participants in this study were 40 students at the National University of Ireland, Galway. They participated in a 24-week subtitling module as part of their regular language course. The module included decoding audiovisual texts, translating the verbal audio element, and constructing target texts. Results showed that the students accepted the subtitling module well and that it could improve their foreign language skills, especially in reading and listening. However, results also suggest that the effectiveness of subtitling may vary depending on the students’ language proficiency and learning style. More research should be conducted to explore the potential of audiovisual translation in second language learning. This study used authentic audiovisual materials and a methodological framework based on the Common European Framework of Reference for Languages to test the effects of subtitling, and it was a valuable attempt to provide new insights into the relationship between audiovisual input and second language acquisition.

In conclusion, the diverse types and characteristics of audiovisual input modes offer abundant resources and effective support for incidental vocabulary acquisition, contributing to the enhancement of learners’ vocabulary proficiency and language competence. As stated by Miao Lixia, language learning is a multifaceted process, with various elements jointly influencing learners’ vocabulary acquisition[21]. The multiplicity of audiovisual input modes can meet the diverse needs of different learners and promote incidental vocabulary learning. Results showed that the students accepted the subtitling module well and that it could improve their foreign language skills, especially in reading and listening. The use of subtitling was also found to have a positive impact on vocabulary learning[18], and corroborated the outcomes of prior studies on the correlation between assisted and unassisted repeated reading contributed to enhancing vocabulary learning of the participants[10]. Similarly, the use of audiovisual input was discovered to boost vocabulary retention, particularly for advanced L2 learners[2]. Additionally, several factors are crucial in ensuring the effectiveness of incidental learning. Learners’ lexical inference ability seems to be enhanced by audiovisual content that provides rich contextual cues not only in semantic meaning but also at the syntactic level[28]. The above-mentioned opinion implies that educators should carefully design and select audiovisual materials to optimize the facilitation of learners’ lexical inference skills and overall incidental learning outcomes.

2.3. The Facilitators and Obstacles in Incidental Vocabulary Learning Via Audiovisual Means

There is strong evidence that supports the occurrence of incidental vocabulary learning through audiovisual means. As Falcon Dario Restrepo Ramos pointed out, an incidental vocabulary acquisition method is promoted by audiovisual means in contexts that provide much information[4]. His research emphasized the role of audiovisual means in incidental vocabulary acquisition and provided a theoretical basis for further exploring how video images, audio, and text elements cooperate. However, it mainly stayed at the theoretical level of proposing the promoting effect of audiovisual means and lacked in-depth discussion on the specific differences of different types of audiovisual materials (such as animated videos, documentaries, etc.) in incidental vocabulary acquisition and how to select appropriate audiovisual materials according to the characteristics of learners, lacking specific operational guidance at the practical level. Study how video images, audio, and text elements cooperate to provide learners with diversified clues and help them understand and remember new words[4]. As Zhang Liming pointed out, in the digital age, text, audio, and video multimodal materials play a positive role in listening comprehension[38]. The visual effects in videos can attract learners' attention and make it easier for them to pay attention to the context in which words are used. For example, when learning new words, vivid images can intuitively display the things or concepts represented by the words, helping learners establish a connection between the words and the actual things, thus better understanding the meaning of the words[38]. His research complements Falcon Dario Restrepo Ramos' research. Although it focuses on the positive impact on listening comprehension, it also implies the potential promoting effect on incidental vocabulary acquisition. However, it did not directly explore the unique mechanism of multimodal materials in the process of incidental vocabulary acquisition, such as the difference in the impact of different modal information on the acquisition of different types of vocabulary (such as abstract and concrete words), and did not mention how to transform the advantages of multimodal materials in listening comprehension into specific teaching strategies for incidental vocabulary acquisition[38]. Audio information enhances the understanding of vocabulary through means such as pronunciation and intonation. The characteristics of pronunciation, such as changes in stress and intonation, can convey the emotional color and semantic focus of vocabulary, enabling learners to more accurately grasp the meaning of vocabulary[32]. Meanwhile, the cadence of intonation can also add a sense of rhythm to the language, making the learning process more vivid and interesting and enhancing learners' participation.

The textual component furnishes learners with concrete definitions and explications. Within the video context, the textual information can manifest in modalities such as subtitles or voiceovers, proffering elaborate details regarding the vocabulary, encompassing aspects like part of speech, application, and collocations. For instance, in particular educational videos, textual elucidations are employed to assist learners in apprehending the semantics of technical terms, thereby facilitating their accurate utilization of these lexical items[33]. Animated videos, with their vivid images and simple plots, can capture beginners' attention and facilitate their understanding of vocabulary. For example, when learning animal-related vocabulary, animated videos can display the images and movements of various animals, enabling learners to intuitively grasp the characteristics of animals and thus better understand and remember these words[20]. Vivid images and interesting plots can stimulate the learning interests of beginners and enhance their learning enthusiasm. For language learners, interest is the best teacher, which can prompt them to actively engage in learning and thus improve learning outcomes[32]. Documentaries are capable of providing an authentic language environment, enabling learners to be exposed to the actual usage of vocabulary. In documentaries, people communicate using language, and learners can acquire the correct usage and context of vocabulary through

listening, watching, and understanding[7]. In summary, animated videos, documentaries, movie clips, etc. play significant roles in vocabulary learning. They can assist learners in understanding and memorizing vocabulary through diverse means, thereby enhancing the effectiveness of vocabulary learning. In practical teaching, teachers can select appropriate video materials based on the levels and needs of learners and guide them in vocabulary learning. However, there are also some obstacles that need to be overcome in incidental vocabulary learning via audiovisual means. One of the main challenges is the potential for information overload. In some cases, audiovisual materials may contain too much information, making it difficult for learners to focus on the key vocabulary. This can lead to confusion and reduce the effectiveness of learning. For example, in a study by Incalcaterra McLoughlin and Lertola, it was found that some audiovisual materials may present an excessive amount of data, causing learners to have difficulty extracting the essential information[18]. Additionally, the quality of audiovisual materials can also vary greatly, and poorly produced materials may not provide clear and accurate information, which can hinder learners' understanding and vocabulary acquisition. As stated by other researchers, low-quality materials may contain errors or be presented confusingly, making it challenging for learners to make sense of the content[12]. Therefore, it is of great significance for educators and material developers to establish strict quality control and evaluation mechanisms to ensure that only high-quality audiovisual materials are used in language learning settings.

To address these issues, educators must select appropriate audiovisual materials relevant to the learners' level and interests. The materials should be carefully curated to ensure that they provide sufficient context and relevant information to support vocabulary learning. As suggested by Laura Incalcaterra McLoughlin and Jennifer Lertola, choosing the right audiovisual materials is crucial as it can significantly enhance the learning experience[18]. At the same time, teachers should also guide learners on how to effectively process and extract the necessary information from the audiovisual materials, helping them to focus on the key vocabulary and ignore the irrelevant details. For instance, the study by Joseph and Nation found that teachers' guidance in helping learners filter out relevant information from audiovisual materials can significantly improve their learning outcomes[16]. In conclusion, audiovisual means hold substantial potential for incidental vocabulary learning as they can provide information and engage learners effectively, enhancing learners' capacity to acquire vocabulary incidentally. However, it is important to surmount the obstacles related to information overload and inferior-quality materials to guarantee learning effectiveness. Additionally, further research is required to investigate the optimal utilization of audiovisual means in language teaching and learning, aiming to maximize the benefits for learners and promote their vocabulary acquisition and language development in a more efficient and fruitful manner.

3. Discussion

After reviewing the findings of this literature review, strong evidence supports the occurrence of incidental vocabulary learning through audiovisual enhanced input for meaning comprehension in second language acquisition. As Gu Qiyi and Zang Chuanyun pointed out, an incidental vocabulary technique is significantly enhanced by audiovisual input in highly engaging and informative contexts[8]. Extensive exposure to audiovisual materials is a crucial feature of incidental learning. This type of learning is also the result of several interrelated factors that ensure its effectiveness.

Research shows that learners must be able to process a significant amount of the surrounding audiovisual information to infer a new word's meaning in context correctly. This prior processing ability ranges from a certain degree to another for general and complete comprehension of the audiovisual content. This ability could be initially developed through

initial stages of focused training that allow for subsequent incidental acquisition of L2 vocabulary gains. As suggested by Laura Incalcaterra McLoughlina and Jennifer Lertola, both types of vocabulary learning could be strengthened if they are integrated into “a multimedia learning environment designed to improve comprehension and vocabulary retention”[18]. Moreover, audiovisual materials that are of personal interest to learners boost motivation, leading to more directed attention to lexical items at the word - sentence grammar level within the audiovisual context. Accordingly, exposure to unknown words should be incorporated within meaningful audiovisual contextual cues, enabling high percentages of correct lexical inference activity.

The impact of audiovisual enhanced input on incidental second language (L2) vocabulary learning is also explored. Audiovisual input can enhance the subconscious acquisition of lexical items. However, its effectiveness varies depending on the proficiency level of the learner. Pilot studies indicate that for low and intermediate L2 learners, reading with audiovisual support is more beneficial as it helps them increase vocabulary gains and improve the retention of lexical items. In contrast, for advanced L2 learners, listening with audiovisual elements was found to have a positive effect on vocabulary retention[2]. Further research should center on the relationship between reading and listening with audiovisual enhancement in high-proficiency L2 learners.

Facilitators and obstacles in incidental vocabulary learning via audiovisual means have also been the focus of research. Several empirical studies suggest that incidental vocabulary learning can be improved through multimodal glosses. At the same time, marginal glosses and still images as multimodal annotations appear to be more effective for incidental learning[38]. Such results advocate for the positive use of multimodal strategies, such as multiple types of glosses and even video captioning in CALL settings for vocabulary learning[4]. Moreover, other strategies that focus on lexical items as the goals of different tasks showed a positive impact in several studies [6]. These researches showed that the repeated occurrence of words in audiovisual contexts conducive for learners to infer the meaning of unknown words provides more significant incidental vocabulary gains. In turn, such facilitators are embedded in modalities that encourage lexical items to become the focus of goal-directed activities.

Important pedagogical implications stem from the results of this literature review. For example, teachers should consider the role of audiovisual text that best suits the interest of learners and the quality of contextual hints that allow the subconscious acquisition of vocabulary. Therefore, the present paper draws attention to considering the relevance and interest level of the audiovisual content for the learners. Selecting audiovisual materials that are not only engaging but also provide transparent and manageable information is crucial. Such activities would boost comprehension and syntactic lexical knowledge and allow the learner to use the newly acquired vocabulary in real-world speech events[4]. Multimodal gloss developers also need to consider how texts will affect vocabulary learning. In addition, AI-powered language learning apps significantly affect the retention and recall of lexical items. As a consequence, such effect is enhanced when complemented with additional aids, including the learner's access to knowledge of words and awareness of vocabulary learning strategies.

In other words, achieving the perfect balance between intentional and incidental learning can improve L2 vocabulary learning. Likewise, the utilization of multimodal texts, with video captioning being a prime example, not only heightens comprehension but also offers the learner supplementary support to associate a lexical item with its meaning accurately. In this regard, incorporating new technologies within the L2 class amplifies the incidental vocabulary acquisition. It holds the potential to assist us in refining current reading strategies and tasks within our learning environment. Beginners and advanced learners can benefit from reading and listening activities incorporating multimodal e-learning technologies, potentially facilitating the incidental acquisition of multi-word phrases and collocations. However, further

exploration and optimization are essential to fully actualize these benefits and take our understanding to the next level. Suppose further research concentrates on how we can effectively implement AI-driven video analysis tools in tasks designed to enhance the retention and recall of both basic and complex lexical items at the meaning and form level. In that case, we can expand upon our existing literature and gain a more profound insight into the acquisition of L2 vocabulary in the 21st century.

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