

# The Use of Visual Aids to Improve Deaf Students' English Vocabulary: A Literature Review

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**Abstract.** This literature review examines the efficacy of employing visual aids to enhance the acquisition of English vocabulary among deaf students. It investigates the vital role of visual aids in conveying meaning, enhancing memory and cognitive functions, and fostering engagement. The review discusses their effectiveness in promoting contextual comprehension, improving learning outcomes, and the integration of visual aids with sign language for deaf learners. The study also addresses the challenges that deaf students encounter, such as learning English as a foreign language, lack of exposure, and the complexities of abstract concepts. The implications of this research highlight the need for collaborative efforts between ESL teachers and sign language experts to develop accurate and culturally relevant visual aids. The review concludes by emphasizing the importance of context-based learning, hands-on experiences, and multisensory approaches to cater to the diverse learning needs of deaf students. This synthesis contributes valuable insights for educators, researchers, and policymakers seeking to enhance vocabulary learning experiences for deaf students through the effective integration of visual aids.

## 1 Introduction

In this day and age of diverse cultures and societies, the ability to communicate in multiple languages is a valuable skill. Language learning goes beyond just picking up new words and phrases as it broadens horizons, encourages cross-cultural interactions, and enhances one's own experiences [1]. Malaysia prioritizes the English language as it is known as the second language of the country and used to be the international language or lingua franca. Malaysians learn English as a Second Language (ESL), and the language is required to be taught for eleven years, from Standard One to Form Five, as stated in Article 152 of the Malaysian Constitution [2]. ESL learners are different compared to native speakers of the language as they acquire the language later in life, usually in the context where their mother tongue is used to learn the new language [3]. Therefore, it is expected that the process of ESL acquisition requires learners to overcome challenges, for example, with the grammar rules and vocabulary that sometimes require understanding in cultural context as the language is not used in the society that Malaysians typically live in.

In the effort of learning ESL, visual aids have emerged as powerful tools that have significantly enhanced understanding and proficiency of the English language. Visual aids

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encompass a wide variety of media, including images, videos, charts, graphs, diagrams, and slides [4]. According to Shabiralyani et al., visual aids provide a multi-dimensional approach to relay information by functioning as complementary elements to spoken or written words [5]. The human brain is naturally structured to interpret visual stimuli effectively; hence, it is an excellent way to learn language and improve vocabulary using visual aids [6]. ESL learners are able to overcome language barriers and accommodate various learning styles using visual aids, thus making sure that they acquire language more thoroughly. It is evidently more significant to use visual aids to learn English words as they can help learners understand the meanings within the context of use. Visual representations of vocabulary, expression of idioms, and the concept of grammar would help ESL learners decode language more effectively. However, there would, of course, be challenges and obstacles in utilizing visual aids as learning tools in the aspects of accessibility and technical issues, for instance.

Since the requirement of learning English as a second language is applied to everyone in Malaysia, the deaf community is not exceptional. The Ministry of Education (MOE) of Malaysia also places an emphasis on special education in the Malaysia Education Blueprint (MEB) 2013-2025. Every child deserves opportunity and access to education, despite whatever conditions they are in, physically or mentally [7]. According to Lee et al., language instruction for deaf students in Malaysia takes place in a unique environment that is formed by both the country's cultural heritage and the unique requirements of the deaf community [8]. The importance of communication in learning and daily life includes the use of sign language, written text, and visual aids to promote understanding and expression. For deaf students, visual aids, in particular, can be powerful learning tools in their quest for English vocabulary [9]. These tools help people communicate across language barriers by using illustrations, charts, films, and animations to explain difficult words and topics. They turn intangible verbal abstracts into observable visual representations, promoting a deeper comprehension of grammatical rules and colloquial idioms.

This literature review paper intends to provide relevant and cohesive studies pertaining to the use of visual aids in improving the English vocabulary of deaf students. The paper focuses on the incorporation of visual aids in teaching vocabulary and the process of vocabulary teaching for deaf students, in particular, to describe the situation precisely. Future-related research will gain insights and guidance by looking at the challenges and opportunities of the subject matter.

## **2 Literature Review**

This chapter will examine the use of visual aids to improve deaf students' English vocabulary. Related studies on the utilization and effectiveness of visual aids to improve the English vocabulary of deaf students are included in the international and Malaysian contexts. Lastly, the challenges of using visual aids in improving deaf students' English vocabulary would sum up the literature review chapter of this paper.

### **2.1 Importance of visual aids for vocabulary teaching**

Visual aids have always been known as one of the most promising TL methods and techniques in language learning. The use of visual aids is also supported by the Cognitive Load Theory, which suggests that they can reduce cognitive load and enhance [10]. The use of visual aids has a more prominent function in vocabulary learning as they can help students understand the concepts and meanings associated with the words, improve memory and cognitive abilities, and encourage interest and engagement.

### *2.1.1 Concepts and meaning understanding*

Visual aids equip words with visual representation, which helps learners comprehend the concepts and meanings associated with the words. According to Hamad, the use of visual aids as a teaching aid stimulated thinking and improved the learning environment in the classroom [10]. This is very advantageous for visual learners who acquire information best through pictures and diagrams. This is proven by Lhendup, who found that teachers perceived visual aids as crucial and significant tools for effective TL [11]. It is simply understood that visual aids, in general, are the easiest and most reliable teaching tool for introducing the meaning of a word to students. Vocabulary teaching using visual aids was also found to boost vocabulary achievement in research by Chai et al. that focused on Malaysian primary ESL learners [12].

### *2.1.2 Improve memory and cognitive abilities*

Through the use of visual aids, learners can associate words with images and improve their memory retention. Visual memories can invoke multiple action plans that can lead to fast and precise memory-guided behaviors [13]. Learners who are presented with words along with visual representations tend to create stronger cognitive connections, thus increasing the likelihood that they will be able to retain the word and its meaning. In a study conducted by King and Markant, it was observed that visual aids as lesson-relevant contextual information were able to promote the learning of 3- to 5-year-old children who participated in the research [14]. Michalik et al. found that visual aids are particularly effective in improving the understanding of people with lower cognitive abilities and positively influence them in making decisions related to many life aspects [15]. It is evidently proven that people can comprehend context better when they are given visual descriptions and are able to apply them in real-life situations.

### *2.1.3 Encourage interest and engagement*

Learners are able to take an interest in teaching content as visual aids because they are mostly interactive and engaging. Visual aids are educational tools used in the classroom to improve student engagement and facilitate the explanation of complex concepts [10]. The selection of relevant visual aids to the TL content can create a successful and pleasant learning environment as the engagement is at an optimum level. A study about the use of teaching aids by Sanjaya et al. discovered that visual tools, including visual components like visually appealing languages and cartoon characters, were successful in gaining students' attention and enhancing their vocabulary skills. In other words, for visual learners, the effective way to encourage them to learn and attain knowledge is through the use of visual representation [16]. This is agreed by a study that discussed the use of visual, auditory, and kinesthetic learning styles in vocabulary instruction and found that incorporating these styles improved students' success and generated high levels of interest [17]. Learners who particularly prefer a visual style of learning would be easily interested and engaged with a lesson that provides things that they find comfortable to use, such as pictures, diagrams, tables, and graphs.

To conclude, visual aids are essential in learning vocabulary as they can increase comprehension of concepts, improve memory retention, enhance contextual understanding, and encourage TL engagement in the classroom.

## **2.2 The effectiveness of visual aids for deaf students' vocabulary learning**

According to research in education, using visual aids like multimedia and audio-visual materials can improve students' vocabulary mastery [18]. According to Hamad, students' academic performance increased when they were exposed to computerized materials and audio-visual aids [10]. These results show how visual aids might improve learning outcomes in educational environments. This part of the review discusses the effectiveness of visual aids for deaf students' vocabulary learning, which is determined by contextual comprehension, learning outcomes, and utilization of visual aids with deaf students' means of communication, such as fingerspell and sign language.

### **2.2.1 Contextual comprehension**

The use of visual aids for deaf students has significantly been proven effective in enhancing their vocabulary learning by helping them comprehend the context and meaning of words. According to González-Reyes et al., the introduction of visual aids and sign language consistently resulted in better vocabulary learning outcomes for deaf students [19]. Deaf students are able to acquire vocabulary better when they are presented with words and visual representation. Since deaf students depend heavily on sign language, the ability to fingerspell plays an important role in their vocabulary acquisition. In fact, a study conducted by Haptonstall-Nykaza and Schick discusses the use of fingerspelling as a visual phonological bridge to aid in decoding English print [20]. The study suggests that fingerspelling can serve as a visual aid to facilitate the understanding of English vocabulary for deaf students. It is believed that fingerspelling is also a form of visual aid for deaf students.

### **2.2.2 Learning outcomes**

The effectiveness of vocabulary learning through the use of visual aids is mostly determined by the learning outcomes. It is proven that for teachers who are teaching deaf students, using visual materials is more effective than using only sign language without visual items in teaching vocabulary [6]. A comparison study conducted by Coleman et al. suggests that incorporating visual aids in vocabulary instruction can be beneficial for deaf learners in improving their vocabulary skills and overall language proficiency [21]. The study compared teacher-provided simultaneous prompting and computer-assisted simultaneous prompting for teaching content-area vocabulary words to students who are deaf or hard of hearing. In other words, the effectiveness of employing visual tools to acquire vocabulary depends significantly on the learning outcomes.

### **2.2.3 utilization of visual aids with fingerspelling and sign language**

Apart from that, deaf students have certain preferences in which the visual aids would be able to function optimally as a learning tool. Yeh and Wang proved that the use of dual presentation types of vocabulary annotations which is text along with visual aids on vocabulary learning, is more effective compared to learning the word in isolation [22]. In the case of deaf students, fingerspelling with the use of any form of visual materials would immensely enhance their vocabulary skills. This is evident as González-Reyes et al. discussed the use of visual aids and sign language in teaching vocabulary to deaf students yielded consistently better results after the introduction of visual aids and sign language in vocabulary learning [19].

In conclusion, teaching vocabulary to deaf pupils through visual aids has proven to be helpful as it can enhance their comprehension level and help teachers achieve their learning objectives. Visual aids also work better according to the preference of deaf students, in which they are utilized with fingerspelling and sign language.

### **2.3 ESL learning of deaf students**

As supported by the United Nations Children's Fund (UNICEF), every child deserves access and opportunity to education. Deaf or hearing-impaired students should be included in receiving equal rights to education. In Malaysia, the government has established a special education program where they can learn in school using the same or designated syllabus for them. Either way, deaf students are required to learn the English language just as mainstream students. Hence, this subtopic highlights the roles of sign language and the ESL learning process of deaf students in Malaysia.

#### *2.3.1 Roles of sign language*

Sign language plays a significant role in the language development of deaf pupils, who learn language in a number of ways. For deaf children to comprehend and use spoken and written languages, Murray et al. claim that accessible sign-first-language learning is frequently necessary [23]. Exposure to visual and sign language, such as American Sign Language (ASL), from infancy onwards helps to boost language development, even for children with low levels of hearing loss. ASL establishes the groundwork for language learning and makes learning other languages easier [24]. The language development of deaf pupils is significantly aided by the use of sign language in the classroom. Therefore, to ensure early intervention and education services, the government should develop policies and initiatives that combine signed language and bilingual programs by designating sign language as the instruction language [23].

#### *2.3.2 ESL learning of deaf students in Malaysia*

In the Malaysian context, Khairul Farhah Khairuddin et al. focused on access, equity, and communication as they examined the experiences of deaf students in Malaysian schools [25]. The study looked at deaf kids' educational experiences in Malaysian primary schools that receive government funding. The study contributed to elaborating on how the use of audiological technology in Malaysia has been able to urge parents of these children to choose to minimize the severity of the impairment. The government has been offering direction by increasing the number of specialists in the sector who can treat and support students who have hearing impairments, as well as offer answers and suggestions. In addition, it has been demonstrated that the lack of assistive technology, such as cochlear implants and hearing aids, is one of the factors that prevent people with hearing loss from developing their language skills in some nations. This information demonstrates that making an effort to help deaf students improve their hearing will make language learning more successful.

Since English is Malaysia's second language, all citizens are expected to have at least a basic understanding of it. The government introduced an English curriculum in primary schools, including for deaf students who use sign language as their primary language. Although English might be considered their third language, it's vital for their education. All educational stakeholders should collaborate to ensure inclusive education for students with special needs, like those with hearing impairment.

## **2.4 Related studies on the use of visual aids for deaf students' vocabulary improvement**

A study by Birinci and Sariçoban examined the use of visuals to teach deaf kids English words [6]. This experiment was carried out in a special school in Turkey. Students in one group studied with visuals, while those in the other group studied simply sign language. The team that used images performed significantly better. Even after six weeks, they could still recall words. However, the group that used sign language exclusively quickly forgot words. This means that utilizing visuals to teach sign language is an effective technique to assist deaf kids in learning and recalling words.

The study by González-Reyes et al. aimed to see if using pictures could help deaf students remember English words better [19]. They studied five 5th-grade deaf students in Chile, giving them pictures like cartoons to help them learn words. After five weeks, they tested the students twice. Some students did better in the second test, where they had to remember actively, while others did better in the first test, where they just had to recognize words. The results were mixed, making it hard to say for sure if pictures really helped them remember words better. The study also had some challenges, like some students not knowing sign language well and not having enough time for everything they wanted to do.

Another international study by Rahmat et al. aimed to determine if the Picture-Assisted Lexical Input Approach helps post-lingual deaf students learn vocabulary better [26]. Three 15-year-old eighth-grade students with hearing loss since age 10 and proficiency in sign language were tested using written assessments. The study used baseline and treatment phases, analyzing data through the "Percentage of Data Points Exceeding the Median" method. After treatment, students' vocabulary mastery improved from novice advanced to novice high level. While results varied between phases, the picture-assisted approach effectively enhanced their vocabulary skills, aligning with previous findings and proving beneficial for teaching English to deaf students.

Within the Malaysian ESL setting, a study was conducted by Abdul Rahim et al. to examine the effectiveness of utilizing text and pictures together to improve reading comprehension for primary school kids with hearing impairments [27]. Six hearing-impaired third graders and five experienced educators participated in observations and interviews for the study. The use of graphics with text improves understanding, aids in symbolization, and makes the subject matter more approachable and interesting, according to the results. There are also documented factors that influence understanding, such as text complexity. Additionally, the use of dictionaries and textbooks written in Signing Exact English (SEE) shows potential as useful tools for encouraging hearing-impaired learners to develop self-confidence and motivation for independent reading. Even though this study does not particularly highlight the use of vocabulary learning, the findings managed to highlight the functions of vocabulary understating in aiding the reading outcomes of the students.

Lastly, a study by Nur Ain et al. investigated how mobile technologies can help deaf students learn English as a second language (ESL), addressing challenges in vocabulary and language comprehension [28]. The study was conducted with ten students from Malaysian secondary schools; the research aims to explore the potential benefits of using mobile devices for ESL learning. Through interviews conducted via Google Meet, the study reveals that mobile technologies, including dictionary apps and online platforms like Google Classroom, have substantial value for these students, especially during remote learning due to the pandemic. Besides that, the other factors, such as the visual aspects of pictures, colors, and graphics, emphasize the selection for the use of mobile technologies rather than using a plain worksheet form. The findings highlight the ease of use and the potential of future applications to support language learning among deaf students in ESL education.

To sum up, several previous studies have investigated the use of visual materials to improve the vocabulary level of deaf students. The studies provided valid and reliable results

in proving the rationale and methods on how to use the tools to ensure that deaf students are able to receive the information just as much as normal students do.

## **2.5 Challenges of using visual aids for deaf students' ESL learning**

The integration of visual aids in ESL learning holds great potential for enhancing comprehension and engagement among students. However, there are also some challenges that deaf students will experience in using visual aids for vocabulary learning. Some of the challenges are due to English being a foreign language to them, the lack of exposure, and the abstract concepts.

### *2.5.1 Foreign language*

The challenges of learning vocabulary and English as a foreign language are interconnected with each other. One cannot master or understand a foreign language without first possessing knowledge of the vocabulary of the language. Although visual aids are meant to improve comprehension, deaf students' specific communication demands make learning a new language more difficult. As a solution to this issue, Ahmadi et al. suggest the explicit teaching of vocabulary learning methodologies [29]. In the paper, they talk about the employment of reciprocal teaching techniques, which include keyword definition, vocabulary process models, and the incorporation of cognitive and metacognitive techniques. In another study by Fajar and Alies, the challenges faced by deaf students in learning English as a foreign language are compiled [30]. They have difficulty understanding English because it is not their first language. This makes writing and processing words challenging for them, and it is proven by Fabbretti et al. that deaf pupils possess simpler sentences and limited vocabulary [31]. Additionally, these students' late language acquisition is the source of their difficulty understanding English. Since sign language is their primary general learning tool, it even takes more work for them to acquire other languages because they need time to master sign language itself.

### *2.5.2 lack of exposure*

When using visual aids in their ESL learning, deaf students may face considerable challenges due to a lack of exposure to signed or graphically represented terms or words. Deaf children may not receive the same amount of accidental exposure to new terms as hearing students, who may do so through spoken discussions, films, or music. This lack of exposure might result in a restricted vocabulary and make it challenging to identify and comprehend foreign words offered through visual aids. A study conducted by Birinci and Sariçoban emphasized how difficult it is for deaf students to pick up new words accidentally compared to their hearing peers [6]. Furthermore, certain vocabulary words may not have well-established or widely recognized sign language equivalents, particularly for specialized or technical terms. A study on the vocabulary development of deaf children with hearing parents who were exposed to ASL at a young age was done by Caselli et al. (2021). They discovered that age-level vocabulary growth occurred in deaf children exposed to ASL by 6 months of age. This study emphasizes how crucial early exposure to sign language is for deaf children's vocabulary development.



### **2.5.3 Abstract concepts**

Since deaf students communicate largely through visual means, abstract ideas that lack concrete examples and are frequently expressed through metaphors or subtle language might be very complex. Students who are deaf may have trouble understanding complicated idioms, metaphorical language, and philosophical ideas without clear visual representations. Lederberg et al. (2013) discuss the language and literacy development of deaf and hard-of-hearing children. The research emphasizes that language development is frequently delayed in these children, especially when it comes to grammar. Other language-related areas of development, such as literacy development, may be negatively impacted by these language shortages. Therefore, deaf students might not be able to fully understand the subtleties and deeper meanings concealed behind such abstract language.

## **3 Implication**

The implications from the literature review on the use of visual aids to improve English vocabulary learning for deaf students highlight the relevance of specific educational strategies that fulfill the particular challenges that this group of students encounters. First off, it is clear that visual aids have great potential to help deaf students narrow the language learning gap. However, a lot of thought has to be put into the selection and design of visual materials. In order to ensure that the meanings transmitted to the pupils are understood correctly, educators should concentrate on developing tools that are in line with the grammatical structure of sign languages. This suggests that ESL teachers and experts in sign language should work together to create thorough visual aids that accurately reflect both linguistic and cultural details, consequently creating a more productive learning environment.

The literature review also emphasizes the significance of context in vocabulary learning. In order to help deaf pupils understand the meanings and functions of new words, visual aids must be included in relevant situations. Group conversations, role-playing, and practical simulations are a few examples of instructional methodologies that have implications for promoting interactive learning. Teachers can help deaf students understand terms better within realistic scenarios by giving them the opportunity to actively engage with visual aids in a variety of contexts. This will promote deeper language comprehension and retention.

In a nutshell, there are various ways for deaf students to benefit from the use of visual aids in their educational setting with the integration of tactile, kinesthetic, and auditory elements, if possible. The activities can be more interactive when involving practical applications of the targeted language and hands-on experiences. This means that teachers should work to provide a wide variety of educational opportunities, utilizing the advantages of many sensory inputs to make a more thorough and interesting educational journey for deaf students who want to expand their English vocabulary.

## **4 Conclusion**

In conclusion, this literature review provides insights into the use of visual aids as a pedagogical tool to enhance English vocabulary learning for deaf students. The synthesis of scholarly insights into the importance of visual aids in giving concepts and meaning understanding, improving memory and cognitive abilities, and encouraging interest and engagement of students are pointed out. The effectiveness of visual aids for deaf students' vocabulary learning can be observed through their contextual comprehension, learning outcomes, and the utilization of visual aids along with fingerspelling and sign language. For the learning of deaf students, the researcher highlights the roles of sign language and the ESL learning of deaf students within the context of Malaysian classrooms. Related past studies



are provided to prove the relevancy of this review paper and why more research should be done to improve deaf students' vocabulary. Despite the suggestions, the challenges must be addressed to strengthen the motivation of teachers to find other approaches and alternatives to enhance deaf students' vocabulary learning.

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