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Teachers' Perceptions on Word Matching Game-Based Learning to Enrich Hearing-Impaired Students' Vocabulary

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Abstract. This study aims to find out the teachers' perceptions of word-matching game-based English vocabulary instruction for students with hearing impairments in a Special School (SLB) in Medan, North Sumatra, Indonesia. Data were collected through semi-structured interviews, field notes, and document analysis with one experienced English teacher using a qualitative case study design. The findings revealed four primary themes related to perceived effectiveness: visual alignment with students' learning styles, increased motivation and enthusiasm, improved vocabulary retention, and fostering peer interaction and collaboration. The teacher also mentioned four problems of implementation: the difficulty of understanding the initial instruction, the management of students' attention and focus, the difference in students' capability, and the extensive preparation of materials and facility's support.These findings provide evidence that the word matching game is an extremely effective, visually-based vocabulary strategy that meets the learning needs of students with hearing impairment, while also revealing the need for systemic institutional support for its sustainable implementation.

Keywords: Game-based learning, Students with hearing impairment, Teacher perceptions, Vocabulary enrichment, Word matching game

1. INTRODUCTION

Vocabulary acquisition is a fundamental component of language learning and forms the basis for the development of communicative competence in any language [1]. In the context of English as a Foreign Language (EFL), vocabulary mastery is crucial, as it directly influences learners' ability to understand spoken and written language and to actively participate in communication [2]-[4]. Consistent findings show that vocabulary knowledge is a strong predictor of reading comprehension, listening comprehension, and overall language achievement [5]-[8], as well as academic success across various subjects [9]. Given its central importance for language learning, effective vocabulary instruction is a key priority for teachers, especially for students with hearing impairments, who face particular linguistic and cognitive challenges that further complicate vocabulary acquisition in a foreign language [10].

Students with hearing impairments in Indonesia typically receive English instruction in special schools called Special Schools (SLB). There, teaching methods are tailored to their sensory needs. Unlike hearing students, who rely on phonological processing and auditory stimuli, deaf and hard-of-hearing students primarily use visual stimuli to access and process language [11]. In these environments, teachers often integrate sign language, visual aids, pictures, and written text as primary communication tools to support English vocabulary acquisition [12]. Visual learning plays a central role: students with hearing impairments demonstrate stronger visual attention and better visual memory. Therefore, picture-based and visual-contextual instruction are highly effective for vocabulary acquisition [13]. Furthermore, peer interaction and group work are invaluable for these students, as they offer opportunities for meaningful language use in visually accessible social contexts [14]. Therefore, to understand how these students learn English through visual, contextual, and social channels, it is crucial to develop teaching approaches that truly meet their needs [15].

Despite the potential of visual and social learning pathways, vocabulary acquisition remains extremely complex for students with hearing loss. These learners typically exhibit delayed development of their first language, which significantly complicates the acquisition of a foreign language such as English [16], [17]. This is primarily due to a substantial vocabulary gap resulting from the reduced incidental language contact that hearing peers acquire through everyday listening experiences [18]-[20].

These challenges are further compounded by systemic and pedagogical barriers, including teacher-centered and monotonous teaching methods, a lack of visually appropriate teaching materials, and assessment methods that focus solely on end results rather than the learning process [21], [13], [17]. When teaching methods are primarily based on auditory and verbal interactions, they prove ineffective for learners who rely on unrestricted visual access [16]. This underscores the urgent need for innovative, learner-centered, and visually oriented teaching strategies tailored to the specific needs of hearing-impaired students.

Game-based learning has emerged as a promising educational approach for improving vocabulary acquisition in deaf students. It aligns with [14], [22], [23] by providing meaningful, contextual, and multimodal learning experiences that promote vocabulary development through active engagement. Studies show that educational games significantly increase student motivation, facilitate active participation, and create a stimulating learning environment, particularly for students with disabilities [24]. Among the various game-based learning formats, word-matching games stand out as a particularly effective strategy for vocabulary development in deaf students. Word-matching games, in which pictures are matched to English words using interactive or digital cards, promote learners' visual processing while providing concrete and context-based vocabulary practice [13]. In practice, students are presented with a set of picture cards and corresponding word cards, which they must pair correctly within a given time or through collaborative group activity. This format not only familiarizes students with target vocabulary through repeated visual exposure but also allows teachers to directly observe students' level of understanding during the activity. Unlike passive matching exercises performed individually on worksheets, collaborative word-matching games encourage communication, the negotiation of meaning, and mutual support. This makes the learning process visible, and teachers can observe learners' actual understanding [25]. For deaf learners in particular, such game-based approaches offer unique opportunities to engage with English vocabulary through visual cues, interactive activities, and collaborative problem-solving, thus directly addressing their reliance on visual learning modalities [12], [17].

Empirical research increasingly demonstrates the effectiveness of word-matching games and similar game-based interventions in improving vocabulary acquisition among deaf students. [26] found that game-based digital platforms effectively support vocabulary learning by motivating students, providing immediate feedback, and enabling repeated practice in a playful manner. [27] further showed that an engaging card game combining visual representations with written words significantly improved vocabulary acquisition and retention among deaf students. This was achieved through specific visual representations that overcome hearing impairments. These findings demonstrated that interactive game-based techniques effectively reduce barriers to vocabulary learning for deaf children and that teachers generally have a positive attitude toward this approach [17], [28]. They rated it as effective in increasing student participation and supporting retention.

Understanding teachers' perceptions is crucial, as they are the primary decision-makers who design, adapt, and deliver instruction in their respective classrooms [29]. Teachers' beliefs, attitudes, and experiences fundamentally shape classroom practice and ultimately determine whether innovative teaching methods, such as game-based learning, are effectively implemented and sustained [30]. However, previous studies on game-based vocabulary instruction for students with hearing impairments have largely focused on student learning outcomes and neglected teachers' perspectives. While several qualitative studies have examined English teaching strategies and challenges in Indonesian SLB settings, none has specifically investigated teacher perceptions of word matching game-based learning as a vocabulary enrichment strategy. Among the few studies that have examined teachers' views, found that special education English teachers had diverse but predominantly positive views of game-based learning[31]. This underscores the need for context-specific research on how teachers in different special education settings perceive and implement such approaches. Furthermore [32], Challenges teachers face when implementing gamification include time constraints and infrastructural limitations. However, these challenges have not yet been specifically investigated in the context of word-matching games for deaf students in an Indonesian language support program. This represents a significant research gap, particularly in Indonesian language support, where teachers face specific challenges such as unique communication needs, varying sensory abilities, emotional barriers, and limited access to appropriate materials and professional development [17], [26]. To date, there is no research on how teachers in Indonesian special education schools perceive the use of word-matching games in vocabulary instruction with deaf students.

This study addresses this gap by investigating teachers' perceptions of game-based vocabulary instruction for students with hearing impairments in a Speech-Language-Pathology (SLB) context in

Indonesia. Focusing on teachers' perspectives, the study aims to provide practical insights that can support more inclusive and sustainable language instruction in special education settings. By exploring teachers' perceptions, the study seeks to uncover educators' beliefs about the effectiveness of game-based English language learning for vocabulary development, their perceptions of student engagement and learning during game-based activities, and the pedagogical value they place on this teaching approach.
Specifically, this study addresses the following research questions:
(1) What are teachers' perceptions regarding the effectiveness of word-matching game-based learning to enrich vocabulary among students with hearing impairments?
(2) What challenges do teachers face when implementing word-matching games for vocabulary learning among students with hearing impairments?

By answering these research questions, this study advances the theoretical and practical aspects of language instruction for deaf students, ultimately assisting in the creation of more inclusive, efficient, and long-lasting language teaching methods.

2. METHOD

This study employed a qualitative case study design to explore teacher perceptions of word-matching game-based English learning for enriching vocabulary among students with hearing impairment. A case study approach is particularly appropriate when the aim is to gain an in-depth, contextually grounded understanding of a real-life phenomenon within its natural setting [33]. This design allows researchers to examine teachers' beliefs, experiences, and teaching practices in detail and to capture the complexity and specificity of classroom contexts, rather than making general statements.

Research Setting and Participant

This research was conducted at SLB Negeri, a state special education school serving students with hearing impairment in Medan, North Sumatra, Indonesia. The school provides specialized English instruction adapted for students with unique sensory and learning needs, operating in a context where class sizes are small, communication is predominantly visual, and teachers must adapt materials independently due to limited standardized resources. The study focused on a tenth-grade English class where word matching game-based vocabulary instruction was implemented. The participant was selected through purposive sampling, a non-probability sampling strategy commonly employed in qualitative research to identify information-rich cases relevant to the phenomenon under investigation [34]. The participant was one experienced English teacher with over five years of experience teaching English to hearing-impaired students at SLB in Medan. The teacher was selected based on the following criteria: (1) minimum three years of experience teaching deaf students; (2) direct experience teaching vocabulary using word matching games; and (3) willingness to participate in the study and provide access to relevant teaching documents and feedback records.

Data Collection

The data were collected using three instruments: semi-structured interviews, field notes with teacher feedback, and document analysis. This allowed for triangulation of data from different sources [35]. Semi-structured interviews were conducted with the teacher participant to explore her perceptions of word matching game-based vocabulary instruction and the challenges encountered during its implementation. The interviews were conducted in Indonesian to allow the participant to express ideas clearly and naturally, audio-recorded with informed consent, and transcribed verbatim [36]. Following the lessons, the teacher made field notes to document student classroom behavior, interactions, and real-time observations during the word matching game activity, providing contextual depth that complemented the interview data [37]. Document analysis was conducted on the teacher's lesson plans (RPP) to provide additional contextual data on instructional planning and its alignment with the learning needs of students with hearing impairmen [38]. The documents analyzed included the teacher's existing lesson plan and the lesson plan used during the word matching game session, both of which were examined to understand how visual-based vocabulary instruction was planned and structured within the classroom context. The validity of the instruments was ensured through expert review, whereby the semi-structured interview guide was examined by the thesis supervisor to confirm its alignment with the research objectives and its appropriateness for the study context.

Data Analysis

Data were analyzed using thematic analysis according to [39]. This method consists of six phases: familiarizing oneself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Interview transcripts, field notes, and document analysis results were read repeatedly to develop familiarity with the data, after which initial codes were generated inductively to capture meaningful patterns related to teacher perceptions and implementation challenges. These codes were then grouped into broader themes that recurred across multiple data sources, subsequently reviewed and refined to ensure they accurately represented the data. Trustworthiness was ensured through triangulation across all three instruments as well as member checking with the participant to confirm the accuracy of interpretations [40].

Ethical Considerations

Prior to data collection, ethical approval was obtained from the relevant institutional authority at Universitas Islam Negeri Sumatera Utara. The teacher participant provided written informed consent before participating in the study. Confidentiality was maintained throughout the research process, and the participant was assured that her responses would be used solely for academic purposes. The school administration also granted permission for the study to be conducted on its premises.

3. FINDINGS

This section presents research findings obtained through semi-structured interviews, field notes, and document analysis with an experienced English teacher at a special needs school in Medan, North Sumatra. Document analysis of the teacher's lesson plans confirmed that the teacher had consistently incorporated visual-based approaches in instructional planning to support vocabulary learning for students with hearing impairment. The findings are presented in accordance with the two research questions.

Teacher's Perceptions of the Effectiveness of Word Matching Game in Vocabulary Enrichment for Students with Hearing Impairment

Thematic analysis of the interview data and field notes revealed four interconnected themes reflecting the teacher's perceptions of the word matching game's effectiveness: (1) visual compatibility with students' learning styles, (2) increased motivation and learning enthusiasm, (3) improved vocabulary retention and understanding, and (4) encouragement of peer interaction and collaboration.

Visual Compatibility with the Learning Style of Students with Hearing Impairment

The teacher identified visual elements as a fundamental necessity in vocabulary instruction for students with hearing impairment, emphasizing that sight serves as their primary channel for accessing and processing information:

> *"Students with hearing impairment are more fundamentally reliant on their sense of sight. That is why I use visual methods, pictures, and sign language to help them understand vocabulary."*

The teacher further noted that the word matching game format which pairs images directly with English words was significantly more engaging than previous methods such as showing pictures via mobile phone and having students look up words in a dictionary. Field notes corroborated this perception, recording that students understood the card images readily available, showed no confusion when viewing the illustrations, and actively used pictures as contextual clues when uncertain about their answers. This suggests that the game's visual design effectively bridges the gap between students' primary learning modality and the demands of English vocabulary acquisition.

Increased Motivation and Learning Enthusiasm

The teacher observed a marked increase in student motivation during game implementation, attributing this to the interactive and visual nature of the activity:

> *"With visual methods or pictures, the children are more attentive, their curiosity is more aroused, their learning increases motivation, and it makes it easier for them to understand the material."*

Furthermore, the teacher emphasized that the specially developed word matching game provided a more enjoyable learning experience compared to previous methods:

"By using the pictures you made, my students are more interested, their motivation increases, and so does their curiosity."

Field notes supported these observations, describing students displaying cheerful expressions, responding efficiently to instructions, and independently attempting tasks without prompting. The consistency between the teacher's perception and the behavioral patterns documented in field notes indicates that the game format created an affectively positive learning environment a condition widely recognized as essential for effective language acquisition.

Improved Vocabulary Retention and Understanding

The teacher affirmed that the word matching game produced a meaningful improvement in students' ability to retain and recall vocabulary, particularly when complemented by follow-up review activities:

"The advantage is that they understand better and find it easier to remember. They also complete the game quickly. And beyond matching, I immediately review and ask them what each vocabulary word means, which object in the classroom it refers to, and they can answer. I feel they have a much better understanding."

The teacher also described a specific assessment strategy employed during the game to verify genuine vocabulary comprehension rather than mere task completion:

"Because I already understand how my students are. During the word matching game activity, they looked enthusiastic, but I also assessed them. For example, I gave an example before starting the game using other vocabulary, then I asked them to say what the vocabulary was in English and Indonesian. So I think they understood the vocabulary from the pictures in English."

Field notes confirmed that students matched most images with correct words without hesitation and successfully recalled vocabulary during review. The teacher's practice of pointing to real classroom objects after the game further anchored vocabulary in a concrete, contextual framework. Taken together, these findings suggest that the game supported not only surface-level recognition but also deeper contextual understanding of vocabulary a pedagogical outcome that extends beyond simple matching tasks.

Encouraging Peer Interaction and Collaboration

The teacher observed that the game's collaborative format naturally fostered peer support and communication among students:

"Sometimes they learn together. For example, when a classmate doesn't know something, they help each other. Sometimes they don't know what the English word is, and the one who knows will raise their hand to help their friend."

Field notes further documented that peer interaction extended beyond verbal communication to include BISINDO (Indonesian Sign Language) and body gestures, enabling students with varying communication abilities to participate meaningfully. Students were also actively observing and positively correcting each other's answers and providing assistance to those who were struggling. Overall, the teachers viewed the word matching game as having great potential to be implemented regularly as a vocabulary enrichment strategy at the school:

"This Word Matching Game is highly suitable to be implemented as a routine strategy at school. Because from the pictures, students become more active and participatory, so their vocabulary improves significantly."

This collaborative dynamic indicates that the game served not only as a vocabulary tool but also as a social learning scaffold, creating opportunities for peer-mediated language development that extended the teacher's instructional reach within the classroom.

Challenges Faced by the Teacher in Implementing Word Matching Games for Students with Hearing Impairment

Despite the perceived effectiveness of the game, the teacher also identified four implementation challenges: (1) difficulty understanding initial instructions, (2) managing student focus and attention, (3) differences in student ability levels, and (4) the need for material preparation and facility support.

Difficulty Understanding Instructions at the Beginning of the Activity

Students initially struggled to grasp the game rules, particularly during the first session. The teacher noted:

> *"Regarding focus, of course, students' focus in class will never be divided at times. But I will try to maintain their focus and ensure they understand the rules of the game."*

Field notes confirmed this, recording initial confusion among several students. However, once the teacher demonstrated the task with concrete visual examples, comprehension improved significantly and the activity continued smoothly. This pattern suggests that while the game requires an initial investment in clear instruction, its accessibility increases considerably once students are familiarized with the format.

Management of Student Focus and Attention

Maintaining consistent student attention throughout the activity posed an ongoing challenge. The teacher acknowledged that divided attention is a natural occurrence in the classroom but emphasized the need to manage it effectively to achieve learning objectives. Field notes recorded instances of students shifting focus away from the task, although most were able to refocus after teacher reminders. Some students also showed brief signs of frustration when encountering difficulties; however, after receiving guidance and encouragement, they persevered and completed the game. This challenge reflects the broader attentional demands of managing a visually rich, interactive activity in a classroom with diverse sensory profiles.

Differences in Student Ability Levels

Variation in cognitive ability and vocabulary mastery among students within the same class presented a significant pedagogical challenge. The teacher described her adaptive approach:

> *"In the classroom, not all students have the same level of ability. So there are differences. For students with lower ability levels, I focus more on them, although the others remain a priority; however, the delivery is simplified so they can understand what I am conveying. Because if the lesson level is lowered, they don't want that. So I keep the material the same but make the way I deliver it easier."*

Field notes confirmed this variability, with some students completing tasks quickly and accurately while others required additional support from the teacher or peers. Nevertheless, all students were able to participate in the activity according to their individual capacities. The teacher's strategy of maintaining content consistency while differentiating delivery reflects a practical and inclusive pedagogical response to the heterogeneous nature of SLB classrooms.

Need for Material Preparation and Supporting Facilities

The teacher highlighted the considerable time and effort required to develop appropriate game materials, particularly in selecting images suitable to students' knowledge levels:

> *"Perhaps the challenge or difficulty lies in selecting pictures and then matching them to their knowledge level, whether this is something they can play or not. And also perhaps in terms of the time needed to create the media tools."*

In addition, the teacher emphasized the importance of institutional and parental support for optimal implementation:

> *"In my opinion, support is truly needed, especially from the school. For example, by providing more projectors, and the use of smartboards must also be handled carefully, since here it is not only students with hearing impairment but also students with intellectual disabilities. And of course support from students' parents as well, who provide pictures, laptops, or notebooks."*

These findings indicate that although the word matching game is viewed as highly effective and possessing great potential, its implementation still requires systemic support from various parties from the teacher as the media designer, the school as the facility provider, to parents as learning support partners at home. This challenge underscores that the game's sustainability in practice is contingent not only on teacher creativity but also on the availability of adequate institutional resources, a systemic issue that extends beyond individual classroom practice.

4. DISCUSSION

Teacher's Perceptions of the Effectiveness of Word Matching Game in Vocabulary Enrichment for Students with Hearing Impairment

Based on the research findings, the teacher considers the word-matching game an effective strategy for expanding the vocabulary of students with hearing impairments. This effectiveness is particularly evident in the students' ability to accurately match pictures to words, recall vocabulary upon repetition, and understand word meanings in context without relying on auditory information. This perception can be explained by [23] dual-coding theory, which posits that the simultaneous processing of information through two channels visual and verbal creates stronger memory traces and more lasting retention than processing through a single channel alone. In the word-matching game, pictures and words are directly linked, enabling students to form dual connections between the visual and verbal representations of each vocabulary item. This is further supported [41] cognitive theory of multimedia learning, which confirms that instructional designs strategically combining visual and verbal elements optimize cognitive processing and enable deeper conceptual understanding. Together, these theoretical frameworks suggest that the word-matching game is not merely an engaging activity, but a cognitively grounded strategy that directly addresses the learning characteristics of hearing-impaired students.

These findings are consistent with those of **[26]**, who similarly found that teachers perceived game-based vocabulary learning as effective for motivating students and supporting vocabulary retention. However, their study was conducted on digital platforms such as Quizizz and Wordwall with young learners in regular classroom settings, whereas the present study documents the effectiveness of a non-digital, card-based format in a special education context. This distinction is significant, as it demonstrates that the pedagogical benefits of game-based vocabulary instruction are not confined to technology-rich environments but extend to low-tech, accessible formats suited to schools with limited digital infrastructure a context that has not been previously documented in the literature. This finding is further corroborated by **[17]** who confirmed the effectiveness of interactive game-based vocabulary techniques for deaf students in Kazakhstan; however, their analysis focused on student learning outcomes rather than teacher perceptions, whereas the current study contributes the teacher's perspective as a primary lens of analysis.

The effectiveness of the word-matching game in enriching the vocabulary of students with hearing impairment is also supported by a number of prior studies. [27] found that picture-based card games significantly improved vocabulary acquisition and retention among hearing-impaired students, as concrete visual representations allow learners to infer word meanings independently of auditory input a finding directly mirrored in the current teacher's observations. Similarly. [13] confirmed that visual interactive learning media demonstrably support hearing-impaired students in understanding and retaining vocabulary more effectively than traditional methods. These convergent findings reinforce the conclusion drawn by [11]. who emphasize that instruction for hearing-impaired students must fully leverage the strengths of visual perception. The current study aligns with and extends this recommendation by providing contextually grounded evidence from an Indonesian special education setting, thereby contributing a culturally and institutionally specific dimension that is largely absent from the existing literature.

Challenges Faced by the Teacher in Implementing Word Matching Games for Students with Hearing Impairment

Although the word-matching game is perceived as effective, its implementation is not without challenges. The first challenge concerns students' initial difficulty in understanding game instructions and maintaining consistent focus and attention throughout the activity. These difficulties are characteristic of classroom dynamics in special education settings, where students with hearing impairment may require additional visual scaffolding and repeated modeling before fully engaging with new activity formats. This aligns with [16] who explain that students with hearing loss often require more structured and visually explicit instructional guidance due to gaps in incidental language learning, which can affect their ability to process new procedural information quickly. The teacher's strategy of providing concrete visual demonstrations to address this challenge reflects effective scaffolding practice, consistent with [14]zone of proximal development, which emphasizes the role of guided support in bridging the gap between what learners can do independently and what they can achieve with assistance. This finding is also consistent with [24], who found that managing student attention and engagement is a recurring challenge in game-based learning for students with disabilities, particularly during the initial phases of implementation when students are unfamiliar with the activity format. However, while this study examined this challenge

broadly across various disability types and digital game formats, the current study specifically documents how this challenge manifests in a non-digital, card-based word matching game for deaf students in an Indonesian SLB a context that has not been previously investigated. This distinction highlights that attention management challenges in game-based learning are not exclusive to digital environments, and that visual scaffolding strategies employed by teachers in low-tech settings are equally critical for successful implementation.

The second and most pronounced challenge lies in the significant differences in cognitive ability and vocabulary mastery among students within the same class. [16] explain that these performance differences are inherent characteristics of groups of students with hearing loss, influenced by variations in degree of hearing loss, family background, and access to early childhood language support. The teacher's strategy of maintaining consistent content while simplifying delivery methods for lower-achieving students reflects the principle of differentiated instruction in inclusive education. [36] and [29]. both emphasize that teachers' pedagogical decisions, grounded in a deep understanding of their students' characteristics, are crucial for successful adaptation of classroom learning. This study is consistent with these perspectives, demonstrating that teacher competence and responsiveness are central to managing ability diversity in special education classrooms. However, while both studies discuss differentiated instruction in broader educational contexts, the current study extends this principle specifically to game-based vocabulary instruction in a hearing-impaired learner setting, demonstrating that differentiation can be achieved even within a single activity format without reducing the quality or challenge level of the learning experience.

The third systemic challenge involves the considerable time and resources required for game material preparation and the need for institutional facility support. This finding is consistent with [32] who noted that time constraints and limited infrastructure were repeatedly cited as barriers to implementing game-based learning. Similarly [21] identified limited access to digital tools and supporting resources as a major obstacle to innovative game-based instruction in the Indonesian context a challenge that equally applies to non-digital formats, as confirmed by the current study. [17] further emphasized that the potential of image-based games for deaf students cannot be fully realized without adequate technical and material support. Unlike previous studies that focused primarily on digital infrastructure challenges, this study highlights that even low-tech game-based approaches demand significant preparation effort and institutional commitment. Therefore, the sustainability of word-matching games as a vocabulary strategy in special education schools requires systemic support from school administration, parents, and policymakers, and cannot rely solely on individual teacher initiative and creativity.

5. CONCLUSION

This study investigated an English teacher's perception of word matching game-based vocabulary instruction for students with hearing impairment at an SLB in Medan, North Sumatra, Indonesia. The findings revealed four themes of perceived effectiveness: visual compatibility with students' learning styles, increased motivation and enthusiasm, improved vocabulary retention, and encouragement of peer interaction and collaboration. Alongside these positive perceptions, the teacher identified four implementation challenges: difficulty understanding initial instructions, managing student focus and attention, accommodating differences in student ability, and the substantial time and resources required for material preparation.

These findings suggest that word matching games represent a pedagogically valuable strategy for hearing-impaired students, as their visual, interactive, and collaborative format directly aligns with the sensory and cognitive needs of this learner group. For English teachers in special education settings, this study underscores the importance of incorporating visually oriented game-based strategies into regular vocabulary instruction, with particular attention to adapting materials for varying student ability levels and providing clear visual instructions during initial implementation. At the institutional level, school administrators should ensure adequate facility support including projectors and printed visual materials while policymakers should consider integrating game-based learning into the official special education curriculum alongside targeted teacher professional development.

The limited sample size of this study, involving a single teacher at one SLB in Medan, suggests the need for broader investigations across multiple schools and grade levels to strengthen the transferability of findings. The reliance on self-reported data through interviews and teacher written field notes also calls for future studies to incorporate direct classroom observation for deeper behavioral triangulation. Furthermore, future research should explore comparative studies on digital versus non-digital word

matching game formats to develop more scalable and accessible vocabulary interventions for students with hearing impairment in Indonesian special education contexts.

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