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The Acquisition of Word Classes in the Indonesian Language by Students with Hearing Impairments

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Abstract

This study explores the acquisition of word classes among deaf students in special education over one academic year (2023/2024), focusing on developing their language skills. Through the analysis of 668 words categorized according to Harimurti Kridalaksana's theory, the research reveals that nouns dominate (37.4%), followed by verbs (22.4%), adjectives (14.9%), adverbs (11.9%), pronouns (7.5%), conjunctions (4.5%), and prepositions (1.2%). These findings suggest that hard-of-hearing children or deaf students focus on concrete objects and actions, indicating a reliance on tangible language in communication. The lower use of pronouns, conjunctions, and prepositions points to more superficial sentence structures, highlighting the need for explicit naming and connections in their writing. The study underscores the need for educators to adapt their teaching strategies to support language acquisition for deaf students better. It recommends bilingual interventions integrating sign and spoken language, emphasizing visual and contextually relevant instruction. The study also calls for targeted support in teaching verbs and adjectives. It advocates for creating interactive, experiential learning environments that foster emotional support and engagement, which can enhance language mastery and communication skills. Additionally, the research highlights the importance of professional development for educators to address the unique linguistic and cognitive challenges faced by deaf students. Finally, it encourages longitudinal research to investigate linguistic dimensions in their language acquisition further. This study aims to contribute to more effective educational practices that promote optimal language development and social integration for deaf children.

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INTRODUCTION

Language acquisition in children who are deaf or hard of hearing is a crucial aspect of their cognitive, social, and academic development. Limited access to auditory input can lead to significant delays in language development, affecting their ability to understand abstract concepts and construct complex sentence structures. These challenges can, in turn, impact their academic success and social integration. Research emphasizes the importance of early intervention in supporting the language development of children with hearing impairments, with the bimodal bilingual approach being recognized as particularly influential. This approach provides a robust linguistic foundation by combining sign and spoken language, allowing children to develop their language and communication preferences more effectively (Clark et al., 2020). Contemporary speech and language interventions also highlight the importance of functional social participation. Various techniques are utilized to improve children's communication skills, including direct interactions that engage them in everyday social activities (Bergeron et al., 2020). The use of hearing aids plays a significant role in enhancing communication skills and influencing cognitive functions in children with hearing loss. Research indicates that auditory experiences through hearing aids can modulate neural dynamics, especially in the fronto-parietal network, which is critical for abstract reasoning and cognitive processing (Heinrichs-Graham et al., 2022).

Telepractice-based interventions have shown promise in enhancing language skills among children with neuromotor and intellectual disabilities and may also benefit children with hearing loss. Parent-based intensive approaches have proven effective in improving lexical and syntactic skills, indicating that teletherapy can be a valuable tool in language acquisition (Micheletti et al., 2021). Early educational interventions in preschool are vital for fostering language, communication, and socio-emotional skills in children with hearing impairments. However, the effectiveness of these pedagogical methods can vary based on socioeconomic status and the quality of preschool education received, highlighting the need for tailored approaches that consider individual and contextual factors (Gerholm et al., 2019).

Overall, this study suggests that language acquisition in hard-of-hearing or deaf children requires a multifaceted approach, encompassing early intervention, diverse therapeutic techniques, and an awareness of social, economic, and contextual factors. These efforts ensure optimal language development, supporting academic success and social integration. Acquiring a first language (L1) in children with normal hearing occurs through direct interaction with their environment, primarily through exposure to spoken language sounds. They learn language by mastering various aspects, including phonology, morphology, syntax, semantics, and pragmatics. In contrast, children with hearing impairments face limitations that often delay the acquisition of spoken language, particularly if they have late access to hearing aids or sign language. These limitations can hinder their ability to understand and produce language and affect their cognitive and social development.

Despite advances in hearing technology and early intervention protocols, children with hearing impairments face challenges in achieving age-appropriate language development milestones. Research supports the bimodal bilingual approach as a robust method for providing a solid linguistic foundation and facilitating practical communication skills (Clark et al., 2020). Furthermore, speech and language interventions focusing on functional social participation are essential for improving communication among deaf children (Bergeron et al., 2020). Limited auditory input also affects cognitive functions, such as fluid intelligence, in deaf children. Enhanced auditory experiences through hearing aids can positively impact neural dynamics, reducing differences in neural activity between deaf and hearing children (Heinrichs-Graham et al., 2022). However, factors such as autism spectrum disorders can complicate language acquisition for deaf children, as delays in diagnosis can hinder access to appropriate interventions (McFayden et al., 2023).

For children with single-sided deafness, cochlear implants can improve hearing but may not fully address challenges related to binaural processing, which is vital for natural language acquisition and comprehension (Yaar-Soffer et al., 2023). This highlights the need for comprehensive and individualized intervention strategies that address auditory and cognitive aspects to support optimal language acquisition and social participation among deaf children. Regarding language acquisition theory, Noam Chomsky's nativism posits that children are born with an innate ability to learn language. Deaf children can develop language skills with limited auditory input, provided they can access language through hearing aids, cochlear implants, or sign language. The acquisition of sign language, such as Mexican Sign Language, occurs naturally in deaf children when they are exposed to a linguistic environment that

parallels oral language development, supported by Universal Grammar and biolinguistics theories (Vite et al., 2023). Early and rich language input is crucial for deaf children, enabling them to notice and learn language patterns from a young age. This input can be in spoken and signed languages, optimizing language development and providing bilingual advantages (Chen Pichler, 2022).

Bilingual bimodalism, involving both sign and spoken languages, is beneficial for cognitive and psycho-social development, and it is recommended to start as early as possible to prevent linguistic deprivation (Humphries et al., 2022). Cochlear implants have improved sensory perception, but there is variability in language proficiency among implanted children, suggesting that auditory thresholds alone do not determine language outcomes (De Stefano et al., 2019). Early implantation and rehabilitation can enhance linguistic skills, but the age of implantation and the quality of auditory input are critical factors (Magierska-Krzysztoń & Olempska-Wysocka, 2018). Sign language plays a significant role in the cognitive and social development of deaf children, and early acquisition is essential even when modern rehabilitation techniques are used (Bogdanova, 2021). A bilingual approach, which includes both sign and spoken languages, is considered the best strategy for developing communication skills and integrating deaf children into the community (Kovačević et al., 2019). Therefore, a comprehensive approach that includes both auditory devices and sign language exposure is essential for the optimal language development of deaf children.

Behaviorism and interactionism offer contrasting perspectives on language acquisition, particularly in deaf children learning through visual methods such as sign language. As articulated by Skinner, behaviorism emphasizes the role of positive reinforcement and repetition in learning, suggesting that visual methods like sign language, when paired with movement or facial expression reinforcement, can enhance language acquisition (Ananda et al., 2023; Widiarini, 2022). This approach is evident in the use of structured repetition and guided activities in language teaching, which are fundamental to behaviorist theory and are still relevant in contemporary educational practices (Widiarini, 2022). On the other hand, Vygotsky's interactionist theory underscores the importance of social interaction in cognitive and language development, positing that optimal language skills in deaf children can be achieved through supportive, interactive environments (Alharbi, 2023). This is supported by studies showing that social interactions, such as those between teachers and students, significantly impact language acquisition and cognitive development (Ajmal et al., 2022).

In the context of deaf education, the role of visual attention and social interaction is crucial, as demonstrated by the practices of deaf caregivers and teachers who use visual and tactile strategies to engage children and promote sign language learning (Singleton & Crume, 2022). These strategies create a developmental niche that leverages the visual modality, essential for deaf children, especially those with hearing parents, to acquire sign language effectively (Singleton & Crume, 2022). Thus, while behaviorism focuses on reinforcement and repetition, interactionism highlights the necessity of social engagement and interaction, both of which are vital in the language acquisition process for deaf children. Integrating these approaches can provide a more comprehensive framework for language learning, accommodating the diverse needs of learners (Gruber, 2022)

In the context of speech and language interventions for deaf children using hearing aids, the focus is on developing pragmatic communication skills. Given that children with hearing loss are at a higher risk of delayed language development, early and targeted interventions are crucial (Bergeron et al., 2020). Research indicates that hearing aids can modulate neural dynamics, affecting cognitive functions, including fluid intelligence, which is essential for abstract reasoning (Heinrichs-Graham et al., 2022). This necessitates a tailored approach to optimize language and cognitive development. Collaboration between speech therapists and educators is vital in creating an inclusive and adaptive educational environment, particularly for children with developmental language disorders (DLD). However, challenges in achieving effective interprofessional collaboration exist due to differing perspectives on DLD treatment (Gallagher et al., 2019).

Research has shown that children with DLD often struggle with processing non-adjacent dependencies in auditory verbal statistical learning, a skill essential for grammar acquisition (Lammertink et al., 2020). This underscores the need for targeted interventions in special education for deaf children to help them acquire language skills appropriate to their developmental stage. In the context of the Indonesian language, which has a rich morphological system characterized by affixation, mastery of word classes—such as nouns, verbs, and adjectives—is critical for children's morphological development. For deaf children, understanding and using various word classes is

fundamental for constructing proper sentence structures and enhancing social communication skills. Mastery of grammar not only aids in building complex sentences but also facilitates social interactions.

This study aims to investigate the extent to which deaf children in Indonesia comprehend and utilize different word classes in the Indonesian language. This research aspires to contribute significantly to developing more effective language teaching methods in unique education settings by identifying typical language acquisition patterns. The primary focus is on analyzing the distribution of word classes according to Harimurti Kridalaksana's theory (Kridalaksana, 2008)and evaluating the relationship between word class analysis results and students' language abilities. Through a comprehensive approach that integrates language acquisition theory, early detection, targeted intervention, and inter-professional collaboration, this study seeks to foster an environment conducive to better language competence among deaf children. Ultimately, it aims to enhance these children's academic achievements and social integration within society. The anticipated outcomes of this research are recommendations for developing a more effective curriculum and intervention strategies to support the language development of deaf children optimally.

METHOD

This research employed a qualitative approach with a longitudinal analysis to observe the language development of deaf students over the academic year 2023/2024. The qualitative design was chosen to allow for an in-depth exploration of changes and patterns in the use of word classes by the students over time, enabling the researcher to relate these findings to relevant linguistic theories. For example, a study by (Holcomb, 2023) examined the translanguaging practices of bilingual deaf children in a family setting over several years. This study provides a rich analysis of children's writing development from ages three to ten. It shows how they draw on their linguistic repertoire, including sign language and writing, facilitated by modeling at home and school. Another study by Dall et al. (2022) also used a longitudinal design to assess developmental trajectories in children with hearing loss, including those with additional disabilities and those not growing up with the majority language. This study focused on early predictors of developmental outcomes and emphasized the importance of early, family-centered intervention.

Lieberman et al. (2014) provide important insights into joint attention in young deaf children, observing how children and their caregivers achieve joint attention through visual cues. This is a critical aspect of language acquisition in a single-modality environment. Meanwhile, Vizzi et al. (2023) offer a psycholinguistic analysis of deaf individuals' writing and spelling competencies, revealing challenges in grammar and lexical-semantic linguistic competencies that contribute to understanding the context of deaf students' language development. (Scott and Cohen, 2023) also discuss the role of translanguaging in the classroom, emphasizing the use of multiple languages and modalities to enhance deaf students' comprehension and expression, an essential component of a qualitative approach to language development.

The study focused on a single participant, a 7-year-old deaf student in grade 1 at the Special Elementary School (SDLB) Part B Sana Dharma in Jakarta. The subject took Indonesian language learning, and the research data consisted of a collection of student learning outcomes in the form of written texts for one year (2023/2024). This participant was selected based on their engagement in Indonesian language learning, providing a focused context for examining language acquisition. In addition, this study also observed the development of word classes in each task completed by students.

Data for this study were collected using a combination of methods designed to provide a comprehensive understanding of the language development of deaf students over the academic year. First, the student's written assignments in Indonesian language subjects were gathered throughout the year. These written texts served as the primary data source for analyzing the use of various word classes, allowing for a detailed examination of the student's linguistic choices and development. In addition to the written texts, periodic observations were conducted in the classroom to document the context of language use. These observations focused on interactions between the student and the teacher and peer interactions. The observation notes provided valuable insights into the supportive environment and the pedagogical strategies employed by the teacher, which were crucial for fostering language acquisition. To further enrich the data, semi-structured interviews were conducted with the teacher. These interviews aimed to gain insights into the strategies used to support the student's language development and to understand the classroom dynamics that influenced the student’s learning experience. Combining written texts, observational data, and teacher interviews created

a robust dataset that informed the research findings.

The analysis of the collected data involved several systematic steps. Initially, a morphological analysis was performed on the written texts to identify and categorize the use of word classes, including nouns, verbs, adjectives, adverbs, pronouns, conjunctions, and prepositions. This analysis aimed to quantify the frequency and distribution of each word class, providing a clear picture of the student's linguistic repertoire. Following the morphological analysis, patterns of language development were identified by comparing the frequency of word classes across different writing tasks. This comparative analysis allowed the researcher to observe student language use trends over time, highlighting growth areas and specific challenges.

Finally, the observation notes and interview transcripts underwent thematic analysis to identify key themes related to teacher support and classroom interactions that facilitated language learning. This thematic approach enabled the researcher to draw connections between the classroom environment and the student's language development, ultimately providing a holistic view of the factors influencing the student's progress. Through this comprehensive data collection and analysis process, the study aimed to deepen the understanding of language acquisition among deaf students and highlight teacher support's critical role in fostering effective language learning. Below is a flow diagram illustrating the research process:

Figure 1. Research Process Diagram

RESULT AND DISCUSSION

The results of the research and discussion include the acquisition of word classes in hard-of-hearing or deaf children and the implications for language learning and educational practices in supporting deaf children.

The Acquisition of Word Classes in Hearing-Impaired Children

In this study, the analysis of 668 words aims to understand the acquisition of word classes in hard-of-hearing children or deaf students in special education and describe the development of word classes. The first step is to group words based on the theory proposed by (Kridalaksana, 2008). This grouping is essential to identify the variation and frequency of word use by deaf children in the context of language learning. The word classes to be analyzed include nouns used to name people, places, objects, concepts, and verbs that describe actions or states. Mastering nouns and verbs is essential to children's language development because these two-word classes often appear in everyday communication. In addition, adjectives that explain or provide information about nouns play an essential role in enriching sentence descriptions, thus helping students express themselves more clearly and precisely. Adverbs, which provide additional information about how, when, or where an action occurs, will also be analyzed to understand how students convey context in their sentences.

Other word classes, such as pronouns that replace the names of objects or people, avoid repetition in communication. In contrast, conjunctions connect words, phrases, or sentences and are essential in constructing more complex compound sentences. Prepositions, which indicate the relationship between nouns and other words in a sentence, provide insight into students' sentence structures. Through this analysis, this study not only focuses on identifying the number and variety of word classes but also evaluates how the mastery of these word classes relates to the overall development of deaf students' language skills. The results of the analysis are expected to provide deeper insight into the challenges and potentials in language learning for deaf children, as well as contribute to the development of more effective teaching methods in special education, with particular attention to the development of word classes that can improve students' language skills.
After grouping words into various classes based on Kridalaksana's theory (Kridalaksana, 2008), the next step is to count the number of each word class. This process aims to get a clear picture of the distribution of word classes used by deaf students in their Indonesian language assignments. By counting the number of words for each class, we can analyze the frequency and variation of word use in their learning context.

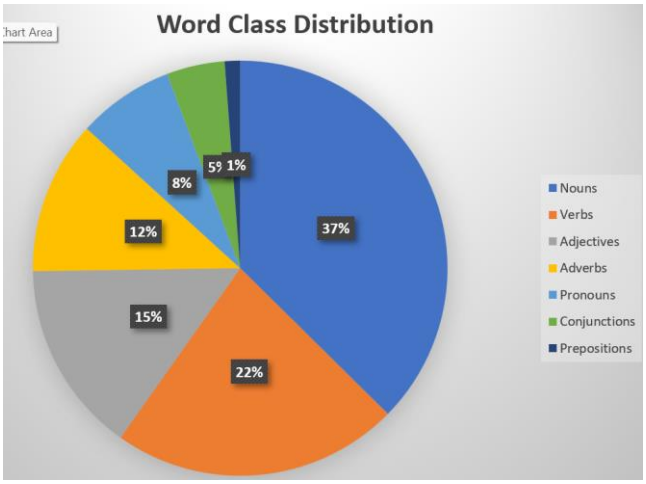

Figure 1. Word Class Distribution

Based on the data above, here is a more detailed analysis of examples of words from each word class that has been analyzed:

Table 1. Nouns

Word Count	Percentage (%)	Example Words	Explanation
250	37.4%	*buku, sekolah, teman, mainan, makanan*	Refers to concrete objects in the student's environment, which is necessary for describing surrounding objects.

Table 2. Verbs

Word Count	Percentage (%)	Example Words	Explanation
150	22.4%	*makan, bermain, belajar, tidur, berbicara*	Describes various actions the student performs in daily life and learning activities.

Table 3. Adjectives

Word Count	Percentage (%)	Example Words	Explanation
100	14.9%	*besar, kecil, bagus, cantik, cepat*	I used to describe the characteristics of objects, helping to clarify and enrich descriptions.

Table 4. Adverbs

Word Count	Percentage (%)	Example Words	Explanation
80	11.9%	*cepat, pelan-pelan, di sini, selalu, kadang-kadang*	Indicates how, where, or how often an action is performed.

Table 5. Pronouns

Word Count	Percentage (%)	Example Words	Explanation
50	7.5%	*saya, kamu, dia, mereka, ini*	Replaces nouns to avoid repetition, which is necessary in social interaction.

Table 6. Conjunctions

Word Count	Percentage (%)	Example Words	Explanation
30	4.5%	*dan, tetapi, atau, karena, sementara*	Used to connect ideas or sentences, helping establish logical relationships between ideas.

Table 7. Prepositions

Word Count	Percentage (%)	Example Words	Explanation
8	1.2%	*di, ke, dari, dengan, untuk*	Indicates the relationship between a noun and other parts of the sentence, such as location or direction.

The linguistic analysis of data from a deaf student's notebook during one year of learning Indonesian in the first grade of Special Elementary School (SDLB) Part B Sana Dharma, Jakarta, provides valuable insights into the language development of children with special needs. The data, consisting of 668 words, highlights the distribution of word classes, revealing patterns in written communication that evolve during one academic year (2023/2024).

Nouns are the most dominant word class, accounting for 250 words or 37.4% of the total. This dominance reflects the student's focus on describing concrete objects and entities in their environment, both at school and home. The frequent use of nouns suggests that deaf students use concrete language oriented toward visually perceivable objects. Examples of common nouns might include *buku* (a learning tool), *sekolah* (a place of learning), *teman* (a social relationship), *mainan* (a recreational object), and *makanan* (a

basic necessity). This reliance on nouns indicates how students respond to their surroundings by emphasizing tangible objects.

The dominance of nouns in the vocabulary of deaf students, as described in the question, aligns with findings from various studies on language acquisition and processing. Nouns are often the most frequent word class in early language development, as seen in Peruvian children, where nouns constituted 57% of their vocabulary and showed the highest correlation with age, indicating a strong focus on concrete and tangible objects in their environment (Junyent et al., 2020). This preference for nouns is also supported by psycholinguistic studies, which highlight that nouns typically have higher concreteness and imageability ratings compared to other word classes, making them more accessible and easier to process for learners, including those with language acquisition challenges (Peti-Stantić et al., 2021). The semantic processing of nouns, particularly concrete ones, is facilitated by their rich sensory-perceptual and sensory-motor information, which enhances accuracy and speed in lexical-semantic tasks (Vonk et al., 2019). This emphasis on concrete nouns reflects a broader educational strategy, where teaching methods often incorporate visual aids and semantic features to reinforce vocabulary learning, especially in young learners and those acquiring a second language (Dwihastuti, 2022). Overall, deaf students' reliance on nouns underscores a natural inclination towards concrete language, supported by psycholinguistic properties and educational practices.

Using verbs in student writing, particularly among deaf students, highlights the importance of action words in conveying meaning and facilitating communication. Verbs constitute a significant portion of the vocabulary used by these students, representing 22.4% of their writing. This underscores their role in describing daily actions and interactions with common verbs such as *makan* (a physiological action), *bermain* (a social activity), *belajar* (a core school task), *tidur* (essential for health), and *berbicara* (verbal communication) reflecting essential and observable activities. This reliance on action verbs aligns with findings that deaf students often depend on visually observable actions when constructing sentences (Salkić & Mahmutović, 2023). The emphasis on verbs is consistent with broader linguistic patterns, where verbs are crucial for animating text and enhancing its communicative quality. However, studies also reveal that students frequently struggle with grammatical rules, such as tense and verb agreement, impacting the clarity and effectiveness of their writing (Surista et al., 2023). Furthermore, a functional analysis of verbs in academic texts shows that students' writing tends to lack the investigative processes found in more advanced academic writing, indicating a need for improved instruction in verb usage to support knowledge building (Manar & Dewanti, 2023). Overall, the prominence of verbs in student writing underscores the need for targeted educational strategies to enhance deaf students' linguistic competence and communication skills, enabling them to better express their thoughts and experiences in both learning contexts and everyday life.

Adjectives and adverbs are crucial in enhancing descriptive writing by providing detailed descriptions of objects, actions, or situations, as evidenced by their significant presence in student writing, accounting for 14.9% and 11.9% of total words, respectively. Adjectives such as *besar* and *kecil* help compare sizes, while *bagus* and *cantik* reflect aesthetic judgments, often linked to visual experiences (Fitri et al., 2022). Semantically and syntactically complex adjectives pose challenges, particularly for children with Developmental Language Disorder (DLD), necessitating targeted interventions to support their learning and use (Davies et al., 2023). Adverbs like *cepat* and *pelan-pelan* explain how an action is carried out, while others like *selalu* or *di sini* indicate frequency or location, contributing to the richness of descriptive texts (Fitri et al., 2022). This issue is compounded by a general lack of vocabulary and knowledge about grammar, affecting their ability to effectively describe details in descriptive texts (Ginting et al., 2020). Addressing these challenges through improved educational models and interventions can enhance students' descriptive writing skills, enabling them to communicate more effectively and accurately (Ginting et al., 2020).

Pronouns are used infrequently in the writing of deaf students, accounting for only 7.5% of their total word count. This limited usage may indicate a preference for explicitly naming subjects or objects, which helps minimize communication ambiguity. Common pronouns such as include *saya* (expressing self-identity), *kamu* (for social interaction), *dia* (third-person reference), and *ini* (indicating a nearby object) are less prevalent, suggesting that deaf students prioritize clarity by naming individuals or items rather than relying on abstract pronouns. This trend aligns with findings from various linguistic studies that emphasize the importance of explicitness in communication (Edzgveradze, 2023; Salkić & Mahmutović, 2023). The quantitative analysis of written communication among deaf children reveals a

significantly lower percentage of pronoun usage than nouns and other word types, further highlighting their focus on transparent and direct expression. Additionally, challenges in using pronouns, particularly object pronouns, indicate a broader difficulty in mastering these words' abstract and context-dependent nature, which may discourage their use (Fitriana et al., 2022). A gender-based study on pronoun usage in academic writing also shows that the frequency of pronouns can vary significantly based on the writer's intent and style, with some writers opting for more explicit noun phrases to convey information clearly (Wakerkwa, 2023). Furthermore, discussions on the role of pronouns in word formation and their varying usage across languages, as explored in a comparative study of German and Russian, underscore the complexity and nuanced functions of pronouns. In summary, the preference for explicit naming over pronouns among deaf students reflects a strategic choice to enhance clarity and comprehension in written communication.

Conjunctions and prepositions comprise only 4.5% and 1.2% of the total words, respectively. The low use of conjunctions implies that the deaf student writes more straightforward sentences without connecting complex ideas. Examples of conjunctions like *dan*, *tetapi*, and *karena* are likely used to link ideas or establish essential cause-and-effect relationships. Similarly, the minimal use of prepositions like *di*, *untuk*, or *dari* suggests that spatial and temporal relations are often conveyed more directly, supported by visual context. This is supported by findings that deaf students often exhibit less flexible and complex prepositional phrase patterns than their hearing counterparts, which can be attributed to their challenges in representing spatial and temporal relations in writing (Manar et al., 2023). This complexity is further emphasized in the context of language learning, where prepositions are identified as challenging due to their varied meanings and syntactic functions, as seen in both English and Arabic studies (Tsaqofi et al., 2022; Yaş, 2022). The minimal use of prepositions by deaf students may thus reflect a preference for visual and contextual cues over linguistic complexity, aligning with the notion that prepositions, while fundamental, are often challenging to master due to their intricate semantic and syntactic roles (Yaş, 2022). This understanding can inform educational strategies aimed at bridging the linguistic gap between deaf and hearing students by enhancing conjunctions and prepositions to improve narrative complexity and coherence (Manar et al., 2023).

This word class analysis shows how students build their written language skills over the year. The dominance of nouns and verbs indicates a focus on concrete things and actions. At the same time, adjectives and adverbs show the student's emerging ability to describe objects and actions with greater detail. The analysis reflects the student's cognitive and linguistic development, gradually learning more complex language structures with the support of teachers and a structured learning environment.

Understanding this distribution of word classes is crucial for educators aiming to design more appropriate teaching strategies for deaf students. Emphasizing clear, visual, and contextually relevant language helps these students develop their writing skills, facilitates their learning process, and enables better interaction with their surroundings. This analysis also sheds light on the broader patterns of language acquisition in deaf students, aligning with previous studies that emphasize the challenges these students face due to limited access to spoken language input. The predominance of nouns, for instance, reflects the ease with which deaf students recognize and use concrete objects, while their difficulties with verbs and adjectives suggest the need for more focused support in these areas. As a result, educators are encouraged to design interactive and visually supported activities to improve students' mastery of verbs and adjectives, which are critical for forming more complex sentences.

The study in question aligns with existing research emphasizing the importance of early exposure to sign language and a supportive learning environment for deaf children to enhance language acquisition. Fitriyani et al. (2024) highlight the necessity of sign languages, such as SIBI and Bisindo, in overcoming communication barriers and facilitating language skills in deaf children. This supports the notion that appropriate teaching methods can significantly improve language acquisition. The critical role of a home language environment accessible to deaf children emphasizes the importance of reciprocal interactions in language development (Ocuto, 2024). Similarly, Vite et al. (2023) demonstrate that deaf children can naturally acquire sign language when their environment provides linguistic stimuli parallel to oral language development, reinforcing that early and natural exposure to sign language is beneficial. Obosu et al. (2023) further explore the factors influencing early sign language acquisition in Ghana, noting that parental knowledge and sociocultural beliefs are crucial in facilitating early language development.

Escudeiro and Gouveia (2023)propose using MOOCs to bridge communication gaps and enhance educational access for deaf students, illustrating the potential of technology to support language acquisition. The interdisciplinary study from Rubiataba/Goiás emphasizes the need for pedagogical strategies that promote social and communicative autonomy through sign language education (Escudeiro & Gouveia, 2023). Matthews and Kelly review the pragmatic development challenges deaf children face due to limited access to fluent language models, highlighting the importance of early and consistent language exposure (Matthews & Kelly, 2022). The necessity of signed languages is further supported by research indicating that children with cochlear implants who also use sign language achieve better language outcomes than those who rely solely on spoken language (Murray et al., 2019). Chen Pichler (2022)advocates for a bimodal bilingual approach, arguing that early access to spoken and signed languages can optimize language development in deaf children. Finally, Goppelt-Kunkel et al. (2022) demonstrate that having a deaf educator in a kindergarten environment significantly improves sign language learning among hearing children. It suggests that implementing similar strategies could also benefit deaf children by providing them with more proficient peers in sign language.

The collective findings indicate that with the proper support, deaf students can enhance their language skills. However, nouns are the most prevalent word class, as is common in early language development. The significance of a rich and interactive learning atmosphere cannot be emphasized enough. Exposure to diverse and meaningful language interactions—whether through teacher-led sessions, peer collaboration, or visual resources—has been proven to boost word class acquisition in deaf students. Engaging in language games, hands-on activities, and experiential learning methods allows students to grasp and retain the meanings of various word classes more effectively. Additionally, emotional support and creating a safe and inclusive environment further motivate students to participate in language learning, facilitating their ability to acquire and utilize new vocabulary. Lastly, this research underscores the potential for future studies to investigate other linguistic elements, such as syntax and semantics, involving larger cohorts of deaf students. A longitudinal study on language acquisition in deaf children could yield valuable insights into the development of their language abilities over time. As educators and researchers strive to comprehend the unique challenges encountered by deaf students, they can devise more inclusive, adaptable, and effective teaching strategies to help these students achieve their full linguistic potential.

Implications for Language Learning and Educational Practices in Supporting Hearing-Impaired Children Students

The implications of this study are significant in the context of education for hard-of-hearing or deaf children, especially in language teaching. The findings showing the dominance of noun use among deaf students imply the need for adjustments in the language teaching approach. Educators are expected to design curricula and learning activities that emphasize the introduction of objects, concepts, and terms relevant to students' everyday environments to improve their understanding and use of language in real-world contexts.

This adjustment aligns with the recommendation of bimodal bilingual intervention, which provides a strong language foundation for deaf children to develop language preferences and communicate effectively (Clark et al., 2020). In addition, research on auditory experiences and cognitive function in children with hearing loss highlights the importance of tailored educational strategies that consider the unique neural dynamics of deaf students. Language teaching should support cognitive development and fluid intelligence, which are affected by auditory experiences (Heinrichs-Graham et al., 2022).

Studies of direct vocabulary interventions for students with developmental language disorders (DLD) also highlight the value of focused vocabulary instruction, which can be applied to deaf students to improve their language acquisition and academic success (Hardman et al., 2023). The communication barriers that sign language users face in accessing information suggest the need to integrate sign language linguistic concepts into educational materials so that deaf students can fully engage with learning content (Pinilla et al., 2019). Furthermore, speech and language interventions for deaf children that emphasize functional social participation suggest that language instruction should focus on vocabulary acquisition and communication pragmatics, which is communi-cation behavior in social contexts (Bergeron et al., 2020). By incorporating these insights, educators can create more inclusive and effective learning environments that meet the needs of deaf students and improve their language proficiency and real-life communication skills.

This study also highlights the importance of providing additional support in the comprehension and use of verbs and adjectives, which is essential for helping students construct more complex

sentences. Interactive and experiential teaching approaches, such as language games and hands-on activities, can encourage students to be more active in learning. In addition, the results of this study underline the importance of creating a positive and inclusive learning environment where students feel safe and motivated to participate. By considering these factors, this study makes a valuable contribution to developing more effective and adaptive teaching methods that support the optimal language development of deaf children.

CONCLUSION

This study analyzes the acquisition of word classes among deaf students in special education, focusing on a dataset of 668 words to evaluate language development over one academic year (2023/2024). By categorizing words according to Kridalaksana's theory, the research identifies the frequency and variation of word use, revealing that nouns are the most prevalent class (37.4%), followed by verbs (22.4%), adjectives (14.9%), adverbs (11.9%), pronouns (7.5%), conjunctions (4.5%), and prepositions (1.2%). The dominance of nouns reflects the students' emphasis on concrete objects in their environments, indicating a tendency to use tangible language. Verbs highlight students' daily actions, while adjectives and adverbs contribute to their ability to describe and clarify these actions and objects. The lower frequency of pronouns suggests a preference for explicit naming, enhancing clarity in communication, whereas the minimal use of conjunctions and prepositions points to more superficial sentence structures.

These findings underscore the need for educators to adapt teaching strategies, emphasizing visual and contextually relevant language to support the writing skills of hard-of-hearing children or deaf students. Strategies like bimodal bilingual intervention and direct vocabulary instruction can facilitate language acquisition and academic success. The study advocates for a rich, interactive learning environment that fosters emotional support and engagement, enabling students to acquire better and utilize language.

To enhance the effectiveness of language teaching for deaf students, educators should design curricula emphasizing the introduction of concrete objects, concepts, and terms relevant to students' everyday environments, thereby improving their understanding and use of language. Focused support in understanding and using verbs and adjectives is essential for helping students construct more complex sentences; thus, implementing interactive activities and games that encourage using these word classes in context is recommended. Incorporating bimodal bilingual approaches that utilize both sign and spoken language can provide a robust linguistic foundation and enhance communication skills for deaf students. Furthermore, fostering interactive and experiential learning environments allows students to engage with language through hands-on activities and peer interactions, improving their mastery of different word classes.

Lastly, providing professional development opportunities for educators focused on the unique linguistic and cognitive needs of deaf students is crucial for employing effective teaching strategies that facilitate language development. Longitudinal research into the language acquisition of deaf students should also be encouraged to examine other linguistic aspects, such as syntax and semantics, ultimately providing deeper insights into their progression and informing teaching practices. By considering these recommendations, educators can create more inclusive and effective learning environments that meet the needs of deaf students, thereby enhancing their language proficiency and real-life communication skills.

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