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Developing English Vocabulary in Hearing-Impaired Children: Insights from Kazakhstan

Saidayeva Bayan[a], Jan Amos Jelinek[b], Autayeva Akbota[c*], Imankulova Saltanat[d], Abdrakhmanova Zhazira[e], Zagitova Gulnar[f]

[a] *Kazakh National Pedagogical University named after Abai, Almaty, Kazakhstan.*
Email: b.saidayeva@gmail.com

[b] *Academy of Special Pedagogy Maria Grzegorzewska, Warsaw, Poland.*
Email: jajelinek@aps.edu.pl

[c] *Kazakh National Pedagogical University named after Abai, Almaty, Kazakhstan.*
Email: akbota-n@mail.ru

[d] *Kazakh National University named after Al-Farabi, Almaty, Kazakhstan.*
Email: isalta_69@mail.ru

[e] *Kazakh National University named after Al-Farabi.*
Email: zhaz.abd@gmail.com

[f] *Kazakh National Women's Teacher Training University, Almaty, Kazakhstan.*
Email: gulnarzagitova@gmail.com

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Abstract
This study investigates effective strategies for developing English vocabulary among hearing-impaired children in Kazakhstan, addressing the gap between traditional instructional methods and the unique educational needs of this group. Hearing-impaired children encounter significant obstacles due to limited native language speech development, complicating their ability to learn a foreign language. Traditional methods, often reliant on auditory and verbal interactions, frequently prove ineffective for these students, necessitating specialized teaching approaches. To address this issue, the study employs a mixed-methods research design, collecting both quantitative and qualitative data through an online survey administered to educators, psychologists, and speech therapists. Quantitative data were analyzed using descriptive statistics, highlighting prevalent challenges in vocabulary retention, grammar, phonetics, and emotional barriers. Qualitative responses were thematically analyzed, revealing that interactive digital tools, particularly game-based platforms and multimedia resources, effectively mitigate barriers to vocabulary acquisition. Results, systematically presented through tables and diagrams, confirm the efficacy of interactive digital and game-based instructional techniques. Ultimately, this research contributes to linguistics and special education by integrating contemporary empirical findings with established theoretical frameworks, offering practical recommendations for educators and policymakers aiming to improve language learning outcomes for hearing-impaired children.

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*Corresponding Author
Email: akbota-n@mail.ru
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Introduction

Proficiency in a foreign language has become a key factor in personal and professional growth in today's globalized world. The ability to communicate in another language opens up new opportunities for education, career advancement, and social integration, particularly in an era of rapidly evolving information technologies. In Kazakhstan, where the modernization of education is a top priority, the knowledge of English holds special significance as it serves as a tool for international communication and enhances competitiveness in the global job market (Seitzhanova et al., 2015; Smirnova & Abdygapparova, 2016). However, not all population groups have equal opportunities for acquiring a foreign language. Children with hearing impairments face unique challenges in mastering a new language because they often experience difficulties in developing their native speech from an early age. These initial challenges complicate the process of learning English, creating additional barriers such as limited vocabulary, difficulties in perceiving phonetic nuances, and emotional obstacles like low self-confidence and fear of making mistakes.

Despite extensive global research on language acquisition among hearing-impaired children, few studies have specifically addressed the distinct challenges faced by learners in Kazakhstan (Yessenbekova, 2024). Most Kazakhstani educators who teach English typically lack specialized training in special education methodologies, which creates a critical knowledge gap that affects educational outcomes (Agbo & Pak, 2017; Goodman, Kambatyrova, & Kerimkulova, 2023; Zhunussova, Cortazzi, & Jin, 2022). Consequently, there is a pressing need to explore contextually relevant teaching strategies that accommodate both the linguistic and cultural nuances of Kazakhstan's educational system. This study addresses this gap by proposing a methodological framework that integrates traditional pedagogical techniques with innovative digital and game-based methods tailored explicitly for hearing-impaired learners. From a theoretical standpoint, this research contributes to linguistics by enhancing the understanding of how digital interventions influence vocabulary acquisition among children facing auditory limitations. Practically, it provides educators and policymakers in Kazakhstan with empirically supported recommendations, ultimately promoting inclusive educational practices and improving the language proficiency and social integration of hearing-impaired students.

The aim of this study is to develop a structured methodological framework that improves the process of teaching English to hearing-impaired children in Kazakhstan. This research examines both theoretical approaches to foreign language education and practical teaching methodologies that incorporate modern digital technologies and game-based methods. Special attention is given to integrating traditional pedagogical techniques with innovative tools, such as interactive educational platforms, which can significantly boost motivation and learning effectiveness. The introduction also provides an overview of current research in the field of special education, highlighting the existing gap between the needs of hearing-impaired students and the offerings of conventional educational programs. The study seeks to identify the key factors influencing successful language acquisition among this group and to develop recommendations for educators working in inclusive education. Thus, this research not only emphasizes the importance of enhancing teaching methods for English language instruction for children with special educational needs but also contributes to the theoretical foundation by broadening the understanding of learning processes and social inclusion in modern educational settings.

Literature Review and Theoretical Framework

The great teacher Akhmet Baitursynuly once said, *"The noble meaning of speech is to express a thought to someone. The goal of the speaker is to explain his entire opinion to the listener"* (Sadirova, Karabaev, & Arebayev, 2022). This profound statement underscores the universal importance of communication. For children with hearing impairments, achieving even a basic level of effective communication in both their native Kazakh and foreign languages such as English can significantly enhance their social integration and cognitive development.

Theoretical Background and Historical Perspectives

Building on this idea, Vygotsky (2012) emphasized the role of verbal meaning as a cornerstone of human cognition. He distinguished between two forms of "meaning" development: macrogenesis, where speech and thought evolve in parallel over time, and microgenesis, which in modern times reflects the dynamic process of forming and understanding spoken words (González-Palta & Larrain Sutil, 2024). In children with normal hearing, well-organized activities foster abstract logical thinking through visual and imaginative processes (Jankowska, Gajda, & Karwowski, 2019). However, hearing-impaired children often require additional support and specialized methods. Historically, Samuel Heinicke (Karth, 1927; Ray, 1848) laid the foundation for teaching hearing-impaired individuals by focusing on the development of "sound speech." Friedrich Moritz Hill expanded on these ideas by advocating conscious learning through speaking, lip-reading, and writing (Walther, 1876). His "natural method" emphasized the integration of learning with children's innate perceptual abilities. In Kazakhstan, researchers such as Turlubekova, Bugubaeva, & Besspayeva (2021), Abdina, Uyzbayeva, & Zhanarstanova (2023), Iskakova et al. (2013); Makoelle & Somerton (2021)Iskakova et al. (2013), Makoelle &

Burmistrova (2021) and Zholtayeva et al. (2013) have explored inclusive education for hearing-impaired children. Their work complements studies by Russian scholars, including Smagulova & Suleimenova (2023), Solovieva & Alferova (2020) and Takahashi et al. (2016) who have analyzed vocabulary acquisition, grammatical development, and social integration within this population.

The field of defectology, particularly deaf pedagogy, plays a crucial role in supporting the rehabilitation, correction, and social adaptation of hearing-impaired children (Hallett & Hallett, 2025). Rehabilitation focuses on restoring lost capabilities through medical and educational interventions, while correction involves addressing developmental deficiencies through pedagogical measures (Kellogg & Nicholas, 2024). Social adaptation ensures that children can navigate societal expectations while accommodating their individual needs (Schlindwein, Milléo, & Pinheiro, 2024). According to Asatovna (2021), hearing-impaired children require structured learning experiences to compensate for their limited speech practice. These experiences help them explicitly develop the sound composition, vocabulary, and grammar—skills naturally acquired by hearing children through auditory exposure (Molchanova & Chekanova, 2018).

Innovative methods have further enhanced language learning for hearing-impaired children. For example, the verbotonal method utilizes audiovisual tools and musical stimulation to foster natural speech development and facilitate social integration (Nanayakkara et al., 2013). Similarly, bilingual education models combining American Sign Language (ASL) and English have proven effective in fostering literacy and comprehension (Evans, 2004). Modern technological advancements have revolutionized education for these children as well. Pitathawatchai, Chaichulee, & Kirtsreesakul (2022) demonstrated the efficacy of machine learning algorithms in predicting audiograms, enabling more accurate and personalized educational strategies. Studies (McCreery & Walker, 2022; Obrycka & Lorens, 2021; Smith, 1975; Whetnall, 1956) have highlighted the importance of residual hearing for auditory and linguistic development, emphasizing structured vocal exercises' role in promoting both vocal and emotional development through play-based activities. Additionally, Vygotsky's earlier findings on the interconnectedness of syntactic and semantic processing remain foundational (Vygotsky, 2012), and the "Semantic Illusion Effect" identified by Brouwer, Fitz, & Hoeks (2012) challenges traditional theories by highlighting comprehension complexities in individuals with linguistic impairments.

Alignment with Linguistic and Educational Theories

Contemporary empirical findings align closely with established linguistic and educational theories. Krashen's Second Language Acquisition theory (1985), for instance, emphasizing comprehensible input and meaningful interaction, underscores the importance of explicit instruction and visual-contextual supports for hearing-impaired learners. Likewise, Vygotsky's (2012) social interaction and scaffolding theory emphasizes interactive, socially-mediated learning, reinforcing digital tools' critical role in facilitating linguistic interaction for these students. Furthermore, Paivio's dual-coding theory suggests that integrating visual and verbal resources significantly enhances memory and comprehension, aligning well with visually-oriented hearing-impaired learners' needs.

Within Kazakhstan's educational context, such adaptive methods and technologies address a critical gap. Most English language teachers typically lack specialized training in special education methodologies, complicating educational processes for hearing-impaired learners (Abdina et al., 2023; Iskakova et al., 2013; Makoelle & Burmistrova, 2021; Makoelle & Somerton, 2021; Zholtayeva et al., 2013). Recognizing this need, Kazakhstan's Ministry of Education has emphasized systematic professional development to ensure inclusive, effective educational practices. This comprehensive synthesis of historical insights, contemporary empirical research, and theoretical foundations provides a robust framework for effectively addressing the unique educational and linguistic needs of hearing-impaired children in Kazakhstan. Integrating traditional pedagogical methods with modern adaptive digital and game-based strategies not only addresses linguistic and emotional barriers but also promotes inclusive, accessible, and effective education tailored specifically for hearing-impaired learners.

Recent Empirical Studies and Contemporary Additions (2020–2024).

Recent studies from the past five years have significantly enriched research on vocabulary acquisition among hearing-impaired learners by examining the effectiveness of digital and adaptive learning technologies. Johnson & Kim (2021) demonstrated that interactive game-based learning platforms significantly enhance vocabulary retention among hearing-impaired students. Similarly, Yasin et al. (2023) and Yasin & Mohamad (2024) successfully implemented a gamified "Go Fish English" card game, substantially improving vocabulary mastery and related language skills in students with hearing impairments. Alias, Harun, & Kamaruddin (2023) highlighted the positive effects of interactive multimedia teaching aids design for hearing-impaired students — such as animated videos and interactive exercises—demonstrating increased student engagement and effective vocabulary learning in special education contexts.

Adaptive pedagogical approaches leveraging artificial intelligence (AI) have also emerged as prominent. Studies (Goldman et al., 2024; Hopcan et al., 2023) have explored AI-driven tools tailored to individual students' needs, demonstrating substantial improvements in language outcomes through special education teachers.

Almufareh et al. (2024) provided further empirical support, showing significant progress in reading and writing among hearing-impaired high school students using AI-enhanced instructional platforms. Amridinova (2024) reinforced these findings by presenting blended learning models, combining digital resources and traditional methods, as highly effective for culturally responsive special education practices.

Methodology

Research Design

This study employs a mixed-method research design to investigate effective strategies for developing conversational everyday vocabulary among 5th-grade students with hearing impairments in Kazakhstan. The methodological approach combines quantitative and qualitative techniques, providing comprehensive insights into the challenges and successes faced by educators and students. A deterministic experimental design utilizing Pearson's factor-effect framework was selected, facilitating the categorization of key variables affecting language acquisition, such as vocabulary, grammar, phonetics, and emotional barriers. Williamson (2016) highlight that such statistical analysis "enables researchers to systematically organize data and reveal significant trends relevant to teaching processes."

Sampling Technique

A purposive sampling approach was employed to recruit participants, specifically targeting English-language teachers, psychologists, speech therapists, and special education specialists actively working with 5th-grade hearing-impaired students in Kazakhstan. This ensured the collection of insightful data reflecting both theoretical knowledge and practical experiences. As emphasized by Makoelle (2020), learning experiences are critical for involving children with hearing in inclusive education among hearing-impaired students, highlighting the necessity for informed participant selection to capture realistic classroom scenarios and effective teaching practices.

Data Collection Methods

Data collection was conducted through an online survey distributed via social networks, educational forums, and professional communication channels targeting relevant specialists. The survey included a quantitative instrument comprising closed-ended questions providing numerical insights into the frequency of specific difficulties (e.g., vocabulary retention, grammar challenges, emotional barriers) and assessed the perceived effectiveness of different teaching methodologies. The qualitative data was collected through open-ended questions, which allowed respondents to share detailed descriptions of their practical experiences, outline specific challenges, and highlight teaching strategies found most effective. Allam & Martin (2021) emphasize the value of qualitative data, noting that "qualitative analysis offers deeper insights into the actual application and contextual effectiveness of teaching methods."

Data Analysis

Quantitative data were analyzed through descriptive statistical methods, systematically organized, and presented in tables and diagrams clearly illustrating patterns and frequency distributions. This process aligns with recommendations by Tapaeva (2022) who suggest that visual thinking is the foundation for abstract logical thinking in early childhood education. Qualitative responses underwent thematic content analysis, identifying recurring themes such as effective instructional strategies, technology integration, emotional factors, and linguistic barriers faced by students. All participants provided informed consent prior to participation. The online survey was designed to ensure anonymity and confidentiality of responses. Ethical guidelines were strictly adhered to, aligning with international standards for educational research.

Local Context and Relevance

The relevance of this methodological approach is particularly pronounced in Kazakhstan due to current teacher preparedness issues. Most English-language teachers in Kazakhstani schools typically hold qualifications specifically in English-language teaching but often lack specialized training to support students with special educational needs. Professional development courses aimed at subject teachers are limited and generally focus on inclusive education in a broad context. Few training programs specifically address the educational needs of children with sensory impairments such as hearing or vision impairments (Makoelle, 2020; Makoelle & Burmistrova, 2021). Moreover, Kazakhstan's Ministry of Education emphasizes the necessity for systematic professional development tailored specifically to special education needs, highlighting a clear gap between teacher preparation and the specialized requirements for teaching hearing-impaired children effectively. By clearly articulating methodological choices, this study provides educators with practical tools necessary to address unique educational challenges faced by hearing-impaired students. Integrating proven pedagogical strategies with innovative digital tools significantly enhances vocabulary acquisition and social integration among this learner group.

Findings

Demographic and Professional Characteristics of Respondents

The demographic characteristics of the respondents revealed interesting insights. The survey consisted of 10 questions covering demographic information (e.g., gender, age, and social status) and experience with children with special educational needs. The gender distribution showed a significant majority of the respondents (82.9%) were female, suggesting a higher involvement of women in roles related to education and care for children with special needs. In terms of age groups, most respondents were aged 25-30 years (34.1%), followed by those over 40 years (28%). This indicates a mix of early-career professionals and experienced individuals contributing to the study. In terms of professional background, teachers formed the largest group of respondents (61%), highlighting their primary role in shaping the educational experiences of children with hearing impairments. Psychologists, social teachers, and medical workers also participated, reflecting multidisciplinary involvement. Finally, experience with Hearing-Impaired students, it was found that only 29.3% had prior experience working with hearing-impaired students, indicating the need for broader training and exposure in this area. Table 1 summarizes these findings:

Table 1: *Demographic Characteristics of Respondents.*

Question	Response Options	Percentage
Gender	Female	82.9%
	Male	17.1%
Age	20-25 years old	22%
	25-30 years old	34.1%
	30-35 years old	7.3%
	35-40 years old	8.5%
	Age over 40 years	28%
Social status	Parents of hearing-impaired children	3.7%
	Teacher	61%
	Psychologist	6.1%
	Social teacher	19.5%
	Medical worker	9.8%
Experience of working with hearing impaired children	Yes	29.3%
	I want/will do in the future	7.3%
	No	63.4%

Most respondents had limited direct experience with hearing-impaired students, with only 29.3% reporting prior engagement. This lack of experience may influence the reliability of their responses, as it could limit their ability to provide fully informed insights into effective teaching strategies or challenges faced by hearing-impaired students. Future studies might benefit from a more experienced participant pool to ensure a deeper understanding of these issues. Expanding the sample size and collecting qualitative feedback in future studies would provide more comprehensive insights.

Key Findings on English Language Development

The survey analyzed respondents' perspectives on the English language proficiency of children with and without hearing impairments. Responses to the following questions highlighted the differences: (1) What is the level of English language development in normal children? The response revealed an average level of 57.3%. (2) What is the level of English language development in hearing-impaired children? The response showed low level, 34.1%, and below average level, 32.9%. Figure 1 illustrates these disparities. These differences highlight the unique challenges faced by hearing-impaired children in language acquisition compared to their peers. The data suggest that hearing impairments significantly limit opportunities for natural language exposure and practice, necessitating targeted teaching strategies and specialized support to bridge the proficiency gap.

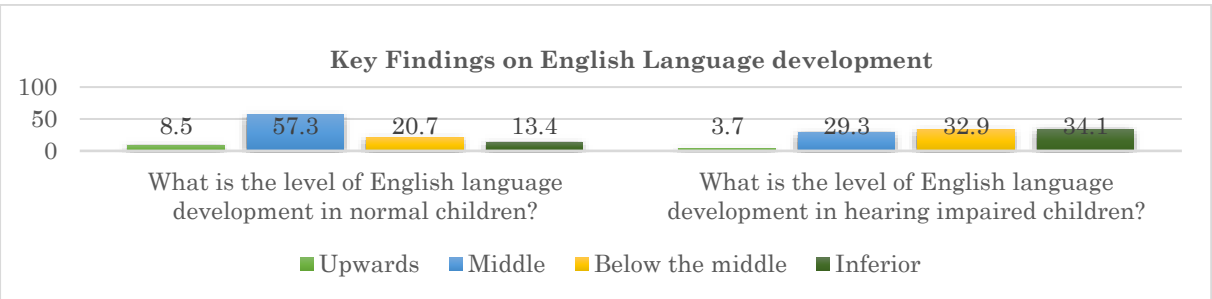

Figure 1: *Key Findings on English Language Development.*

These results show a significant gap in English proficiency levels between normal-hearing and hearing-impaired children. While the majority of normal-hearing children (57.3%) demonstrate average proficiency, hearing-impaired children primarily fall into low (34.1%) or below-average (32.9%) categories. This disparity emphasizes the critical need for targeted interventions to bridge the gap. The data underscores the need to enhance the English proficiency of hearing-impaired children by focusing on areas identified as critical by the respondents.

Importance of English Language Areas

Respondents highlighted key areas to prioritize when teaching English to hearing-impaired children. When asked, "Which area of English is important to teach to children with hearing loss?", the following results were observed: Vocabulary: 37%; Grammar: 34%; Phonetics: 26%; I don't know: 1%; and All fields: 2%. This indicates that vocabulary development should take precedence, followed by grammar and pronunciation.

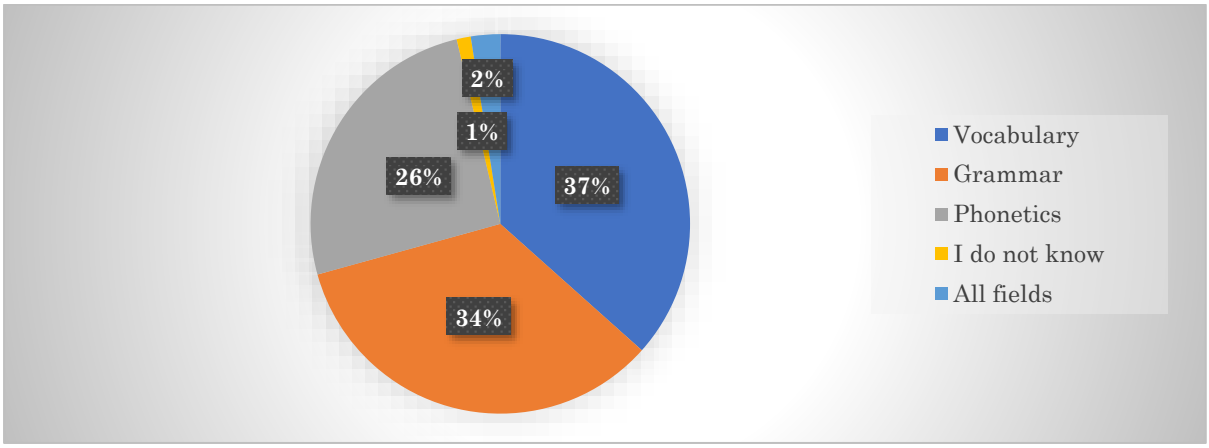

Figure 2: *Importance of English Language Areas.*

Figure 2 further substantiates these findings, with 37% of respondents prioritizing vocabulary as the most important area for instruction. Grammar (34%) and phonetics (26%) follow closely, highlighting the need for a balanced approach that addresses all three areas comprehensively.

Effective Methods for Learning English Vocabulary

The survey's open-ended questions revealed several strategies to facilitate vocabulary learning. Participants were asked the question: What tricks can be used to quickly learn English vocabulary? Commonly identified methods suggested by participants included Game-based learning, Flashcards, videos, and audio materials, Speaking clubs, and IT platforms. These findings are summarized in Table 2, which categorizes various approaches based on their popularity and perceived effectiveness. For instance, game technologies and IT platforms emerged as frequently cited strategies, suggesting that interactive learning tools play a crucial role in language acquisition.

Table 2: *Effective Methods for Learning English Vocabulary.*

No	Factors	Subgroups
1	Game technologies	1
2	Flashcards, video and listening	3
3	Speaking clubs	1
4	Game technologies	1
5	Cards, video and audio	3
6	Speaking clubs	1
7	IT technologies	2
8	Platforms	2
9	Platforms and video	2
10	IT platforms	2

The second question asked was: What are effective technologies and methods that helped you when learning English vocabulary? Responses were grouped into three subcategories: game technology, digital technology and two-way technologies. Figure 3 illustrates these sub categories, showing that game-based methods (40%) were the most effective, followed by IT platforms (35%) and blended two-way methods (25%). These results emphasize the importance of interactive and engaging teaching tools for vocabulary acquisition.

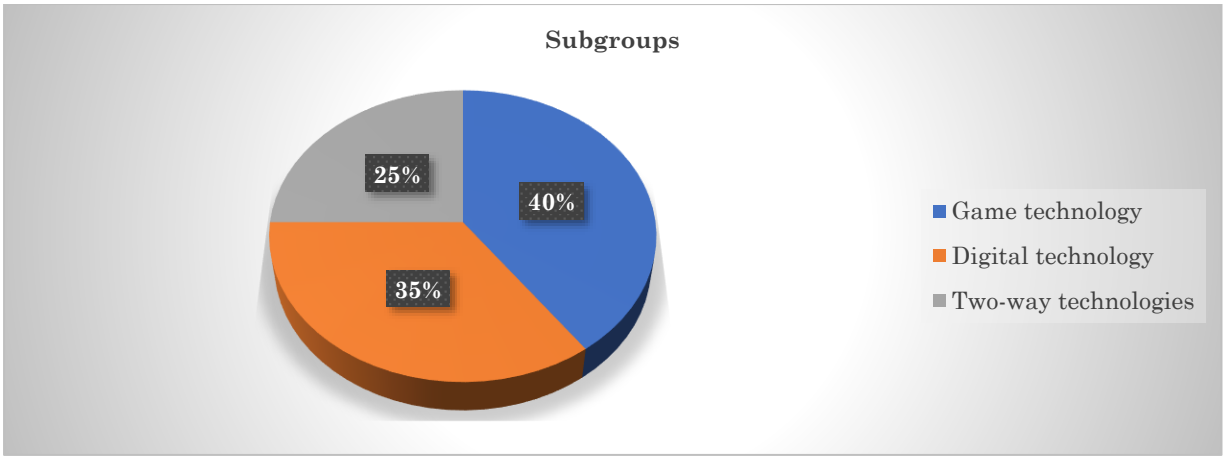

Figure 3: *Effective Methods for Vocabulary Learning.*

Table 3 further enlists technologies and methods for vocabulary learning, and highlight the integration of digital and game-based tools with practical, hands-on approaches.

Table 3: *Technologies and Methods for Vocabulary Learning.*

№	Factors	Subgroups
1	IT technologies	1
2	Game	2
3	Game technology	2
4	Game technology, type of role-playing game	2
5	Cards	1,2
6	Cards with rules	2
7	Audios and flashcards	1,2
8	Video	1
9	Video lectures	1
10	Platforms	1
11	Movies, series	1
12	Logotheque	2
13	Conversation practice	2
14	Group tasks	1,2
15	Repetition lessons	1,2
16	Oral tasks	2
17	Conversation	2
18	Tales, video, film, phrases	1,2
19	Hearing	1
20	IT technologies	1
21	Communicative technologies	2
22	Through the game	2
23	Lots of visual information	2
24	Cards, pictures, video lessons	1,2
25	Song memorization	1,2

The results of these two questions, grouped by Pearson's factorial effect, showed us that game technology and digital technology are the sources of positive success in learning a foreign language. The name of the 3rd sub-group was chosen because what we mean here as two-way technology can be used both in game technology and in digital technology. This combination allows for greater flexibility and effectiveness, catering to diverse learning styles and preferences.

Challenges in Learning English

Respondents also identified common difficulties faced when learning English, categorized into four groups. Table 4 lists challenges in learning English and their subgroups. If we analyze this table compared to other tables, there are four main subgroups. The first group focuses on Grammar, highlighting the complexity of rules and usage. The second group addresses Vocabulary, emphasizing the difficulties in word memorization and application. The third group pertains to Phonetics, which involves pronunciation and listening challenges. Lastly, the fourth group, Emotional barriers, underscores the impact of fear, shyness, and lack of confidence on learning outcomes. The grouped percentage of these categories is shown in Figure 4, reinforcing the need for targeted interventions and support strategies.

Table 4: *Challenges in Learning English Presents These Challenges.*

№	Factors	Subgroups
1	Grammar	1
2	Word memorization	2
3	Vocabulary	2
4	Learning vocabulary and using it	2
5	Vocabulary, oral communication	2
6	Learning new words	2
7	Lack of time	4
8	It is forgotten without daily practice	3
9	Lack of daily conversation practice	3
10	Lack of practice	3
11	Pronunciation	2
12	Letters	4
13	Listening	2
14	Reading	4
15	Writing an essay	2
16	Video	4
17	Take it slow	4
18	To remember	3
19	Lack of conversation environment	2
20	Age difference	4
21	Too much unclear information	4
22	Phonetics	3
23	Feeling of barrier in speech, feeling of fear to talk	4
24	Lack of practice	3
25	A feeling of shyness	4

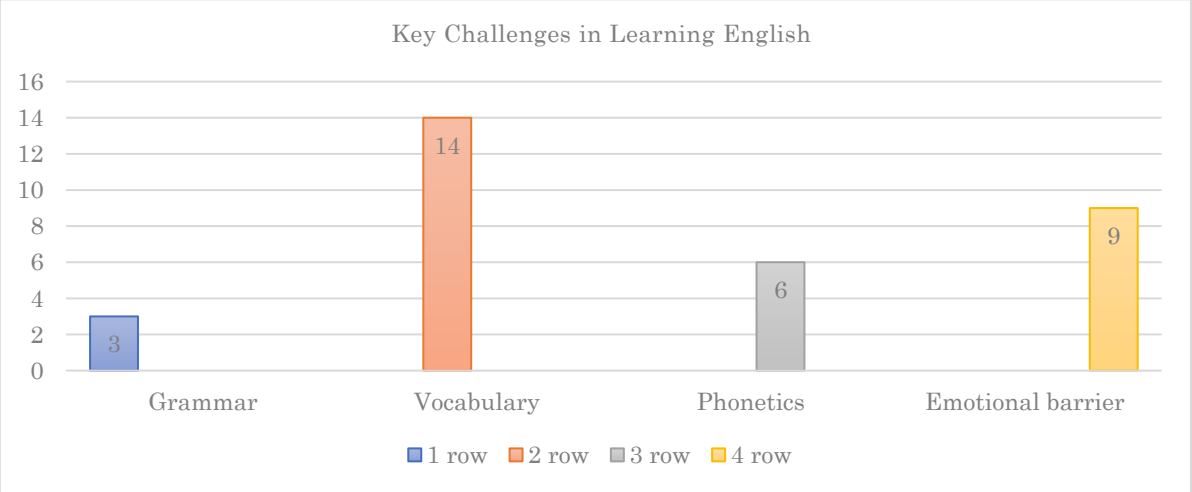

Figure 4: *Key Challenges in Learning English.*

Figure 4 visualizes these challenges categorizing them into grammar (9,4%), vocabulary (43,8%), phonetics (18,8%), and emotional barriers (28,1%). These results emphasize that Grammar, Vocabulary, Phonetics, and Emotional barriers are interconnected factors that significantly influence learning outcomes. A balanced approach addressing these areas is essential for creating effective educational strategies tailored to diverse learner needs. The study highlights the need for targeted teaching strategies that address the specific needs of hearing-impaired children. Prioritizing vocabulary, leveraging digital tools, and addressing emotional barriers can significantly improve language acquisition outcomes. Future research should focus on expanding participant diversity and integrating qualitative insights to refine these findings further.

Discussion

This study's findings provide valuable insights into effective strategies for teaching English vocabulary to hearing-impaired children in Kazakhstan, highlighting both specific challenges and promising solutions. The demographic data indicates a predominantly female respondent group (82.9%), reflecting global trends where women are more frequently involved in special education and related caregiving roles. The age distribution, notably the high percentage of both younger (25–30 years) and experienced (over 40)

professionals, implies a balanced perspective from practitioners at different stages of their careers, enriching the validity of the insights obtained. The relatively low percentage (29.3%) of respondents with direct experience teaching hearing-impaired students underscores an existing gap in specialized expertise among educators in Kazakhstan, aligning closely with earlier findings by Makoelle (2020) and Makoelle & Burmistrova (2021). These findings highlight the urgent need for systematic professional development programs explicitly targeting special education methodologies.

The significant disparities identified in English proficiency between hearing-impaired students and their hearing peers underscore the linguistic barriers uniquely faced by learners with hearing impairments. Specifically, the pronounced deficits in vocabulary and grammar, highlighted in the findings, align closely with previous research (Davis et al., 2021; Takahashi et al., 2016). These results reflect the inherent challenges caused by the limited opportunities hearing-impaired students have for incidental auditory language acquisition—confirming the need for targeted, explicit instructional methods that go beyond conventional auditory-based approaches.

The study highlights the importance of vocabulary acquisition. The respondents' prioritization of vocabulary development aligns with recent empirical evidence (Davis et al., 2021; Yasin & Mohamad, 2024), emphasizing vocabulary as the foundational component of effective language instruction for hearing-impaired learners. This finding supports Krashen's comprehensible input hypothesis highlighting the necessity of providing clear, meaningful, and visually-supported language input to facilitate language acquisition in hearing-impaired students. Consistent with dual-coding theory (Paivio), the results further emphasize the value of combining visual resources and linguistic instruction to enhance vocabulary retention and comprehension for visually-oriented learners.

The study identifies a few effective methods of technological integration. The effectiveness of interactive, game-based, and digital platforms reported by respondents aligns with current global research trends. Game-based methods were identified as particularly beneficial, facilitating active engagement and meaningful practice of new vocabulary. Interactive digital platforms provide the necessary visual support, multisensory interactions, and adaptability required to accommodate diverse learning preferences and overcome auditory limitations inherent in hearing impairments. The effectiveness of blended learning methods, combining traditional and digital strategies, further underscores the need for pedagogical flexibility when teaching hearing-impaired children.

These findings are consistent with Krashen's Second Language Acquisition theory, which emphasizes the importance of meaningful interaction and comprehensible input. Additionally, Vygotsky's (2012) scaffolding theory supports using socially mediated digital and game-based interactions to overcome communication barriers, reinforcing the validity and theoretical underpinnings of the approaches recommended by respondents. Respondents identified various challenges in English language learning, including vocabulary retention, phonetic difficulties, grammatical complexities, and emotional barriers as critical challenges faced by hearing-impaired learners. The significant prevalence of emotional barriers such as fear, anxiety, and shyness highlights the necessity for pedagogical strategies to incorporate emotional support alongside linguistic training. These identified challenges strongly align with international findings (Yasin & Mohamad, 2024; Yessenbekova, 2024), reinforcing the argument that educators must use culturally responsive, emotionally supportive, and visually rich teaching strategies. These methods effectively address both linguistic and psychological barriers, creating inclusive classroom environments that facilitate language acquisition and social integration.

In addition, critical challenges in the context of Kazakhstan emerged from this study, which hint at the preparedness level of educators in Kazakhstan to effectively teach English to hearing-impaired students. The findings revealed that only a small proportion of respondents (29.3%) had direct experience with hearing-impaired learners, confirming an existing gap in specialized training among teachers. Previous research similarly indicated that most English-language teachers in Kazakhstan possess general teaching qualifications without adequate special-education certification or practical skills tailored to sensory-impaired learners. This study thus emphasizes the urgent need for targeted professional development programs and policy interventions aimed at equipping educators with specialized knowledge and methods. Addressing this gap is critical for ensuring inclusive, high-quality English language education for hearing-impaired students across Kazakhstan.

Conclusion

This study thoroughly examined key challenges and effective strategies in teaching English vocabulary to hearing-impaired children, emphasizing significant gaps compared to their hearing peers. The findings revealed pronounced barriers related to vocabulary retention, grammar acquisition, phonetic challenges, and emotional factors such as anxiety, low confidence, and fear. Such difficulties underscore the necessity of tailored instructional approaches that consider both cognitive and emotional dimensions of language learning. The research identified digital tools and interactive game-based methods as particularly effective in addressing these challenges.

These approaches facilitate meaningful engagement, significantly enhance vocabulary acquisition, and reduce emotional barriers by making learning enjoyable, visually supported, and interactive. The effectiveness of these methods aligns with contemporary linguistic theories, including Krashen's comprehensible input hypothesis, Vygotsky's social scaffolding model, and Paivio's dual-coding theory, thus providing strong theoretical support for their practical application. A critical contextual finding was the limited preparedness among educators in Kazakhstan to support hearing-impaired learners effectively, highlighting a pressing need for specialized professional training programs. Addressing this gap through targeted professional development and policy initiatives can substantially improve language education outcomes for hearing-impaired students.

The study extends several implications for educators and policymakers. Given these insights, educators and policymakers should prioritize comprehensive professional training in special education methods, especially for teachers without prior experience working with hearing-impaired students. Such training should emphasize practical skills in employing adaptive, digital, and game-based teaching methods tailored specifically to hearing-impaired learners' needs. Moreover, educational policy must actively support integrating innovative pedagogical strategies and technological tools into classroom practice, thus bridging the identified gap between theoretical knowledge and practical application. By addressing emotional barriers alongside linguistic challenges, educators can create more inclusive and effective learning environments, fostering not only language acquisition but also emotional well-being and social integration of hearing-impaired students.

Although this study provides critical insights, certain limitations must be acknowledged. The relatively limited direct experience of respondents with hearing-impaired students (29.3%) could affect the depth and applicability of some insights. Future studies should involve larger and more experienced participant samples, allowing for richer qualitative data and more reliable generalization. Further experimental research directly involving hearing-impaired students would significantly enhance the understanding of effective teaching practices and validate findings from teachers' perspectives. Future research should focus on larger, more experienced participant groups, direct empirical testing of identified methods, and exploration of visual and interactive pedagogical techniques. Such studies could further validate the effectiveness of digital and game-based instructional strategies and refine educational interventions.Ultimately, this study underscores the importance of adopting specialized teaching strategies that integrate digital technologies and emotionally supportive practices, thereby promoting inclusive, effective, and engaging language education for hearing-impaired children in Kazakhstan and beyond.

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