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Gamification on EFL Learner with Deaf Disability: A Systematic Literature Review

Iim Nurhasanah[1], Nafan Tarihoran[2], Purnama Rika Perdana[3]

[1,2,3]UIN Sultan Maulana Hasanuddin Banten, Indonesia
* Corresponding Author e-mail: 232623106.iim@uinbanten.ac.id

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Abstract: This study aims to examine the effectiveness of gamification-based technology in English language learning for students with Special Education Needs (SEN), particularly those with hearing impairments or deaf disabilities. A systematic literature review (SLR) was conducted using the PRISMA framework, which includes three main stages: identification, screening, and inclusion. A total of 183 articles were retrieved from Google Scholar, Scopus, and Web of Science, using keywords related to gamification, EFL learning, and deaf disabilities from publications between 2020 and 2024. After filtering for relevance and methodological rigor, 10 studies were selected for analysis. The findings indicate that gamification enhances engagement, motivation, and learning outcomes for students with hearing impairments by integrating interactive storytelling, visual cues, sign language-based content, and adaptive feedback mechanisms. Several studies highlight the positive impact of mobile gamification applications, digital storytelling, and reward-based learning on vocabulary acquisition, reading comprehension, and speaking skills. Moreover, gamification fosters self-directed learning and provides real-time feedback, allowing students to learn at their own pace. Despite its benefits, challenges such as limited access to high-quality gamified platforms, the need for teacher training, and concerns about excessive screen time remain. However, with ongoing advancements in educational technology, gamification has significant potential to be further optimized for inclusive education. Future research should explore long-term impacts and the integration of emerging technologies such as virtual and augmented reality in gamified EFL learning for students with hearing impairments.

Kata Kunci:
Gamifikasi, Pembelajaran EFL, Disabilitas Tunarungu, Pendidikan Inklusif, Pembelajaran Berbasis Permainan.

Abstrak: Penelitian ini bertujuan untuk menguji efektivitas teknologi berbasis gamifikasi dalam pembelajaran bahasa Inggris bagi siswa dengan Pendidikan Kebutuhan Khusus (SEN), khususnya mereka yang memiliki gangguan pendengaran atau disabilitas tuna rungu. Tinjauan pustaka sistematis (SLR) dilakukan menggunakan kerangka kerja PRISMA, yang mencakup tiga tahap utama: identifikasi, penyaringan, dan inklusi. Sebanyak 183 artikel diambil dari Google Scholar, Scopus, dan Web of Science, menggunakan kata kunci yang terkait dengan gamifikasi, pembelajaran EFL, dan disabilitas tuna rungu dari publikasi antara tahun 2020 dan 2024. Setelah disaring untuk relevansi dan ketelitian metodologis, 10 penelitian dipilih untuk dianalisis. Temuan menunjukkan bahwa gamifikasi meningkatkan keterlibatan, motivasi, dan hasil belajar bagi siswa dengan gangguan pendengaran dengan mengintegrasikan penceritaan interaktif, isyarat visual, konten berbasis bahasa isyarat, dan mekanisme umpan balik adaptif. Beberapa penelitian menyoroti dampak positif aplikasi gamifikasi seluler, penceritaan digital, dan pembelajaran berbasis hadiah pada perolehan kosakata, pemahaman bacaan, dan keterampilan berbicara. Selain itu, gamifikasi mendorong pembelajaran mandiri dan memberikan umpan balik secara langsung, yang memungkinkan siswa belajar dengan kecepatan mereka sendiri. Meskipun bermanfaat, tantangan seperti keterbatasan akses ke platform gamifikasi berkualitas tinggi, kebutuhan akan pelatihan guru, dan kekhawatiran tentang waktu layar yang berlebihan tetap ada. Namun, dengan kemajuan teknologi pendidikan yang berkelanjutan, gamifikasi memiliki potensi signifikan untuk lebih dioptimalkan untuk pendidikan inklusif. Penelitian di masa mendatang harus mengeksplorasi dampak jangka panjang dan integrasi teknologi baru seperti realitas virtual dan augmented dalam pembelajaran EFL gamifikasi untuk siswa dengan gangguan pendengaran.

Introduction

The digital age has revolutionized education, offering new opportunities and challenges, particularly in inclusive education for students with special needs. Education plays a crucial role in both academic and non-academic development, aiming to help individuals reach their full potential. Quality education should not be limited to students without disabilities but must also be accessible to those with special needs. As stated by (Mahlangu & Mtshali, 2024) one of the key objectives of inclusive education is to provide equal learning opportunities for all children, including those with disabilities. Special needs students include individuals with developmental delays, medical conditions, mental disorders, or congenital impairments (M. Khasawneh, 2023). These students require specialized support and tailored learning strategies to maximize their educational potential. Among the various classifications of special needs, hearing impairment is one of the most significant barriers to language acquisition and communication (Gülbay et al., 2024).

The rapid advancement of technology has introduced innovative methods for teaching English to students with special needs, particularly through game-based learning applications. Gamification, as a pedagogical approach, has gained traction due to its ability to enhance student engagement and motivation. (Ariyani, 2021) emphasized that games can serve both as entertainment and as effective learning tools. Furthermore, research has demonstrated the effectiveness of educational games in addressing learning challenges faced by students with disabilities. (Atar et al., 2021) highlighted the benefits of mobile learning, which not only improves accessibility for individuals with physical disabilities but also offers various pedagogical advantages. Similarly, (Alshaikhi, 2020) found that gamification significantly enhances student motivation and learning outcomes, making it a promising approach for teaching English to students with hearing impairments.

Given these findings, this study aims to explore the effectiveness of gamification-based technology in supporting English language learning for students with hearing impairments. By incorporating gamified learning strategies, students can engage in self-directed learning, repeatedly interact with educational content, and enhance their language acquisition in an interactive and stimulating environment.

The research aims to determine the effectiveness of technology-based gamification in English language learning for students with hearing impairments or deaf disabilities, how it enhances engagement and motivation, and identify the most effective gamification design strategies for supporting English language acquisition.

The research aims to determine the effectiveness of technology-based gamification in English language learning for students with hearing impairments or deaf disabilities, how it enhances engagement and motivation, and identify the most effective gamification design strategies for supporting English language acquisition in these students.

Theoretical Review

Deaf Disability / Hearing Impairment

The World Health Organization (WHO) defines a deaf person as having a hearing threshold greater than 60 decibels (dB) in his ear at best in the frequency range of 250-8000 Hz. Aside from that, the American Speech-Language-Hearing Association (ASHA) defines

a deaf person as someone who has permanent and substantial hearing loss and cannot understand speech without aid. Deafness can be regarded as a state of hearing loss that results in students' inability to capture numerous inputs, notably through their sense of hearing (Olsson et al., 2021). Deafness is a condition that prevents the perception of certain sound stimuli (Mustikasari et al., 2022). In other words, deaf disability is a condition in which a person can not have the ability to hear the voices around.

Generally, children with disabilities attend special schools and receive special education according to their needs. Special Educational Needs (SEN) students are students that require additional assistance during the teaching and learning process. (Razi et al., 2021) Special education is a method of teaching and learning that is tailored to the needs and circumstances of the students. Thus, learners can gain knowledge and soft skills regardless of their circumstances and situation. According to (Firestone, 2015), special education entails providing education for children with special needs in an atmosphere that is conducive to their development. The primary goals are to assist students in obtaining the necessary knowledge despite their impairment.

Deaf Student

According to Wuryanti, (2018) in (Mustikasari et al., 2022) deaf students is students who are have hearing loss as well as speech difficulties. Experienced deafness leads to a knowledge of very complicated concepts and cognitive intellectual capacities that are normally behind those of regular students. Beside it, (Susilo Adi et al., 2017) define "deaf students" as students who have a hearing disability that makes it challenging for them to perceive information in the form of sounds and interpret articulation.

Deaf students always communicate with other deaf or hearing friends via sign language or, on sometimes, oral language. Sign language is a language that is formed by using a bodily part (for example, the lip, hand, or fingers), as well as by moving. (For example, when Deaf students are hungry, they touch their stomach, etc.), allowing hearing people to readily comprehend what Deaf students are thinking rather than communicating through sign language. (Nugroho & Lintangsari, 2022).

English for Deaf Students

In the modern era, English has emerged as a global language (Tarihoran, Nafan; Alhourani et al., 2022). According to Maduwu (2016) in (Putri, 2023) English is one of the lessons given to students from elementary school to college. English can also be learned by many populations, particularly deaf students. Because English is a foreign language that is widely spoken around the world (Ramadhanti et al., 2023), deaf students must learn it so that they may read a wide range of literature and use a number of resources to gather information and avoid falling behind.

The process of learning English differs between regular and deaf students. According to Brelje (1999), there are two basic approaches to teaching deaf students: lip reading and sign language with oral language. Teaching English to special needs students, particularly those who are deaf, remains an issue. (Yunisari et al., 2021). Teaching English to a deaf students seems very impossible. When teaching English, teachers generally use an oral

method of teaching, which is teaching the lesson by voice (Moreira Vinces & Villafuerte-Holguín, 2022). The lessons not only delivered orally but also the students are tested how they understand their hearing and their oral response during learning.

Here are the problems that deaf students face when studying English:

- Deaf pupils experience challenges in understanding English as it is not their native language.
- Difficulties with word processing and writing.
- Difficulties and challenges in creating lexical rigidity.
- Difficulty understanding grammar while learning English.
- Challenges and problems faced by deaf kids in learning English, including reading achievement.

Deaf students require specific accommodations when learning English. Special treatment requires accessible materials, assistive technology, and a language translator. Language interpreters play a vital role in Deaf students' English language development. In this case, the interpreter's responsibility is to translate spoken words into sign language. As a result, communication between the teacher and the deaf students will take place during the teaching and learning of English (Nugroho & Lintangsari, 2022). Similarly, one of the ways that can be used to help the deaf is by using visual aids in teaching. Visual aids are a very useful help for deaf students because the eyes are the main channel of deaf people to receive information, the teaching aids that they can see can help them in assimilating information. And visualizing learning materials for teaching hearing-impaired students is one of the primary ways for meeting special education demands (Mustikasari et al., 2022). As a result, deaf use visual media to enhance their comprehension of learning material and boost their memory.

Gamification

The current digital age, the utilization of digital media and technology is an ideal answer, particularly in the sphere of education (Fakhri Amin et al., 2023). Special education is intended to organize teachers' teaching techniques and address the requirements of all students with learning disabilities. Thus, technology contributes to kids' abilities to learn more about the world. (Arenas & Dela Cruz, 2019). Digital technology is one of the most significant factors influencing today's educational institutions. In the 1980s, digital technology-based visualization gained popularity as a more effective, efficient, interactive, and nice tool (Nikmatullah et al., 2023). Gamification has also been used to help the deaf learn through visualization (Mustikasari et al., 2022).

According to Brown, et al., (2009) in (Mustikasari et al., 2022) Gamification emerged alongside the advancement of science and technology. This has an impact on the development of new educational resources and media. The computer is currently being utilized to create computer-based learning materials. ICT has become a significant tool for impacting the quality of a country's education. (Dicheva et al., 2015) define gamification is a learning strategy that applies game components to non-game circumstances to make the learning process more appealing as a mechanism to improve motivation and learning results. Meanwhile, according to (Arenas & Dela Cruz, 2019) Gamification is a multidimensional

social and technological phenomenon with the ability to give a wide range of benefits, including enjoyment and social benefits via communities and social interaction.

It can be concluded that gamification is one of the alternative learning strategies based on technology that might be an intriguing option to assist students increase their learning knowledge and motivation in order to attain the best possible learning outcomes.

A study by (Moreira Vinces & Villafuerte-Holguín, 2022) found that a memory approach with realia and gamification helped informants remember more English words. Meanwhile research by (Aisyah Ayu Mustikasari et al., 2023) shown that to develop gamification, a unique design is required, particularly when conceptualizing visualization in the game. One of the visualization approaches used to build gamification is to construct a storyboard. Gamification allows for the application of digital media learning for students, which increases student interest in studying and improves the learning process' effectivenes.

As a result, gamification can help students better comprehend the subjects they are taught, create a pleasant environment, and raise student learning motivation more efficiently.

Method

The research methodology employed in this study is quantitative research. As defined by Creswell (2018) in (Sukmawati et al., 2024), quantitative research is a philosophy-based approach to examining specific populations or samples. Quantitative research employs data conversion and statistical analysis to examine a phenomenon.

The research method approach is systematic literature review using the PRISMA (Preferred Reporting Items for Systematic reviews and Meta Analyses). According to Iain Chalmers et al. (2002) in (Papaioannou, 2014) systematic literature review is a systematic process of identifying, evaluating, and synthesizing all relevant scientific evidence related to a research question. Systematic literature reviews often answer research questions by synthesizing all available evidence and assessing its quality. Synthesizing is putting together different material to tell a single, cohesive tale. The synthesis can be narrative qualitative, quantitative, or both (Hewitt et al., 2023).

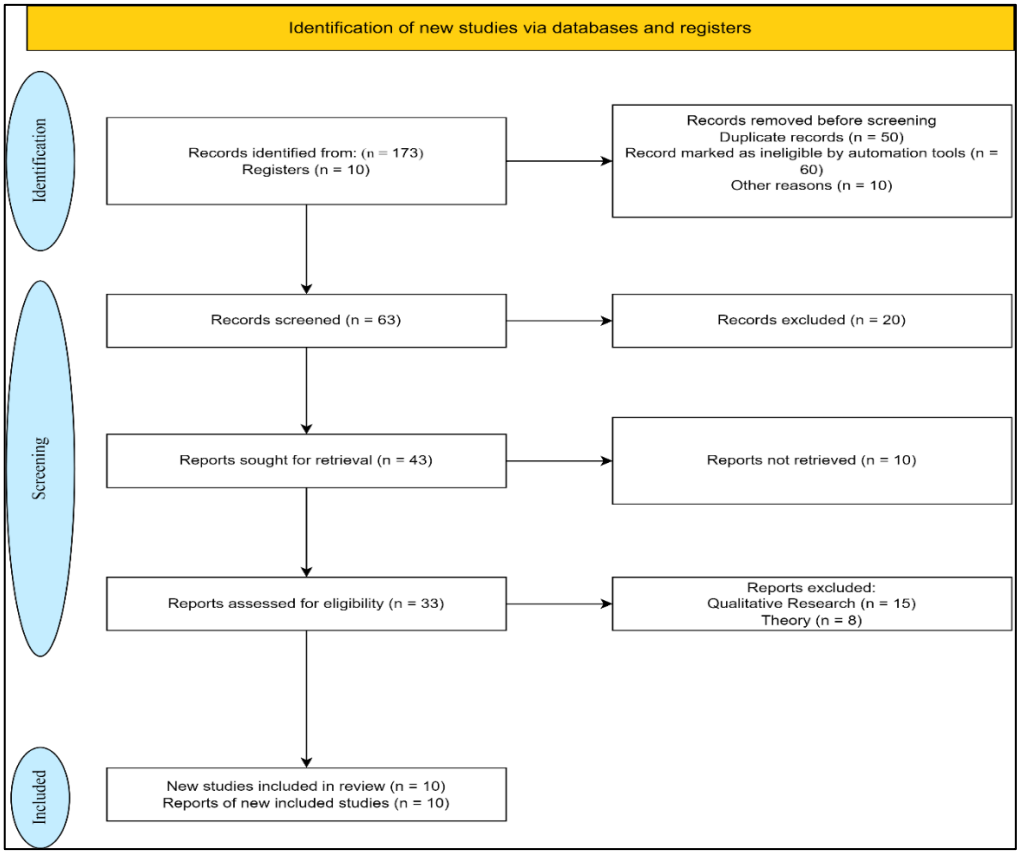
The study used PRISMA to identify studies on gamification in EFL learning and learning for people with deaf disabilities in the last five years. The research was sourced from databases like Scopus, Web of Science, and Google Scholar. The studies were filtered to remove duplicates and irrelevant articles. The remaining articles were evaluated based on methodology quality, topic relevance, and relevance to the research question. Only studies discussing gamification in EFL learning were included in the analysis.

As part of the procedure, the inclusion criteria are used to determine which research subjects will represent the research sample a,nd the exclusion criteria for determining which subject cannot represent because it does not meet the criteria of the study sample status (Xiao & Watson, 2019). The results are presented in a PRISMA flowchart, demonstrating the selection process and the number of studies identified, screened, and evaluated.

Result

The result can be seen in a PRISMA diagram below.

Figure 1. PRISMA Flowchart of the Selection Process



Based on the PRISMA framework, the systematic literature review in this study followed three main stages: identification, screening, and inclusion. Initially, 183 publications related to the research topic were collected and analyzed from Google Scholar, covering the period from 2020 to 2024. During the identification stage, 120 articles were excluded due to duplication, irrelevance, or not meeting the inclusion criteria, leaving 63 articles for further review. In the screening phase, an additional 20 articles were removed based on specific filtering criteria, such as methodological limitations or lack of relevance to the research questions, reducing the pool to 43 articles. A final filtering process was conducted based on subject matter, titles, and abstracts, which resulted in the exclusion of 33 articles that did not directly address gamification in EFL learning for students with hearing impairments. Consequently, 10 articles were identified as highly relevant and included in the final analysis. These selected studies provide valuable insights into the effectiveness of gamification strategies in supporting English language acquisition for students with hearing impairments, highlighting key themes such as engagement, motivation, and pedagogical impact.

To make the systematics of the literature review more structured, this descriptive overview attempts to describe the objects and subjects studied from each journal or selected article in the form of tables to see the information more clearly and broadly.

Table 1. List of Selected Journals

No.	Author and Year	Research Titled	Findings
1.	(M. A. S. Khasawneh, 2023)	The Effectiveness Of Using Android Based Learning Media On The Cognitive Aspect Of Students With Special Needs	The research reveals that using Android-based educational content has a considerable favorable influence on students' cognitive components; nonetheless, the results were not satisfying.
2.	**(Yuniarti et al., 2024)**	**Developing Podcast-Based Learning Media for English Education Among Deaf Students**	The results highlights that the implementation of the PODclusive application improved the learning of deaf students. With sign language video content and offline access, students will have a better understanding of the English language lesson materials. The program has been evaluated by experts, tested by users and received good accuracy scores on content, design and educational purposes.
3.	(Agustina et al., 2024)	Developing Learning Media For Deaf Students Of SMPLB Muhammadiyah Jombang: Siaga (Speaking Skill Games)	The findings of this study state that the application SIAGA was developed through consultation with experts, and then it went through validation procedures by media, language, and disability specialists. From these, the feedback about the relevance was 95% and that on media design was 79%, suggesting the need to improve the visuals, font readability, and clarity in instructions. In sum, post-implementation evaluations through student questionnaires averaged 89% regarding the effectiveness, ease of use, and motivational effect of the application.
4	(Vijayalakshmi et al., 2024)	Skillquest Edu : Game-Based Education For Students With Disabilities (Deaf)	The study reveals that SkillQuest Edu is an innovative platform that empowers deaf individuals to master pronunciation and language skills with over 90% accuracy. The system integrates game-based education, providing interactive learning experiences tailored to individual strengths and challenges, bridging communication barriers, and increasing confidence and proficiency in language acquisition among deaf learners.
5	(Westin et al., 2022)	Inclusive AR-games for Education of Deaf Children: Challenges and Opportunities	The study found that the opportunities and challenges in designing inclusive AR games for deaf children's education. The results show that AR games can be a fun learning tool that includes activities with various sign languages, although the development of AR games for deaf children is still under-researched.
6	(Rizqita et al., 2025)	Development of Game-based Learning to Improve Understanding of Energy Source Material for Deaf Students	This study developed game-based learning to improve deaf students' understanding of energy source material. The results showed that the use of games can improve students' conceptual understanding and engagement in learning.
7	(Sousa et al., 2022)	Exploring the Feasibility of Game-Based Tangible Resources in the Teaching of Deaf Preschoolers and their Hearing Peers	This study explored the feasibility of using play-based real-world resources in teaching deaf preschoolers and their hearing peers. The results suggest that this approach can enhance social interaction and collaborative learning between deaf children and their hearing peers.
8	(Razi et al., 2021)	English As A Foreign Language (EFL) Teachers Teach English For Deaf Students	The results indicated that there were several problems faced by EFL teachers in teaching the deaf students. It can be categorized into linguistic and nonlinguistic. Likewise, each strategy is implemented based on the problems and depends on the teachers' teaching experiences. It is suggested to provide an extensive training program for English teachers and facilitate the learning media to get the success of teaching and learning process for the deaf students.
9	(Adnyani et al., 2024)	Teaching English As A Foreign Language To Deaf And Hard-Of-Hearing Students In Indonesian Contexts	This study identified a lack of teacher experience in developing curricula and syllabus for teaching English to deaf students. Other issues include limited understanding of sign language by teachers and students, lack of learning materials, and students' learning characteristics. Teachers generally use ineffective translation and classroom management methods. It is recommended that policy makers review the English curriculum, provide special training for teachers, and design classrooms that are appropriate to the learning needs of deaf students.
10	(Tambunal & Ismail, 2024)	English Teacher'S Strategies in Teaching Students With Hearing Impairment At SMP Luar Biasa YPAC	This study identified the strategies used by teachers in teaching English to students with hearing impairments and the challenges faced during the teaching-learning process. Teachers used manual methods including sign language and finger spelling, as well as oral methods such as lip reading. The challenges faced included students' difficulty in understanding words, limited vocabulary, and the need for repetition of material.

Based on an analysis of three journals included in the systematic literature review, the use of gamification in learning English for students with Special Education Needs (SEN), deaf disability, or hearing impairment as a learning media was found to be interactive and

effective, with a significant positive impact on the learning experience. Students have a better understanding of the concept of learning English and in its application, experts and users have evaluated gamification to recommend to users (teachers, students, schools) as a learning tool.

Effectiveness of Technology-Based Gamification in English Language Learning for Students with Hearing Impairments

Technology-based gamification is increasingly being used in inclusive education to enhance English language learning for students with hearing impairments. This approach provides an engaging and interactive learning environment, enabling students to overcome traditional barriers in language acquisition. Gamification elements like points, badges, leaderboards, and interactive storytelling enhance motivation, encourage active participation, and facilitate language comprehension. Mobile gamification applications improve accessibility for students with disabilities, allowing them to learn at their own pace (Atar et al., 2021). Studies show higher engagement and retention in gamified learning tools compared to traditional methods (Alshaikhi, 2020).

Gamification can improve cognitive and social development in students with hearing impairments by fostering problem-solving skills, collaboration, and self-directed learning. Traditional text-based or auditory-centered instruction is ineffective for deaf students, who rely heavily on visual and kinesthetic learning. Educators can use sign language, visual cues, and interactive simulations to enhance vocabulary acquisition and sentence construction. Games serve as both entertainment and educational tools, helping students grasp complex linguistic structures in a stress-free environment (Ariyani, 2021).

Gamification is a valuable tool in English learning for students with hearing impairments, as it allows for personalized instruction based on individual needs. This adaptability ensures that students with varying degrees of hearing impairment receive appropriate support. Various methods, such as visual storytelling, sign language integration, and interactive quizzes, can be tailored to meet the diverse needs of learners. Customized gamification strategies can boost students' confidence and motivation, leading to better academic performance. Additionally, gamification helps bridge communication gaps between teachers and students (Gülbay et al., 2024).

Despite the benefits of gamification in teaching English to students with hearing impairments, challenges persist in its implementation. Some educators lack the necessary technical skills, leading to inconsistencies in instructional delivery. The availability of high-quality, inclusive gamified applications is limited, necessitating further research. Excessive screen time may reduce face-to-face social interaction and hinder communication skills development. However, with proper instructional design and a balanced approach, gamification can transform English language learning. Future research should focus on optimizing gamification strategies, improving accessibility, and addressing technology integration challenges.

The Role of Gamification in Enhancing Engagement and Motivation Among Deaf Students in EFL Learning

Gamification is a promising approach to improve engagement and motivation among students with hearing impairments in English as a Foreign Language (EFL) learning. Studies show that game-based learning strategies increase student participation and create a more immersive experience. Incorporating rewards, challenges, and interactive storytelling significantly boosts motivation (Alshaikhi, 2020). Mobile gamified applications help maintain students' attention and interest, despite communication barriers (Atar et al., 2021). These findings align with the broader literature on gamification, suggesting that learners are more likely to sustain their learning efforts when placed in a game-like setting with clear goals, instant feedback, and a sense of achievement (Ariyani, 2021).

Gamification promotes autonomy and self-directed learning, especially beneficial for students with hearing impairments. Digital learning platforms with game mechanics allow students to control their pace, revisit challenging concepts, and receive personalized feedback (Gülbay et al., 2024). PODclusive, a podcast-based gamified learning tool, showed that incorporating sign language videos, interactive quizzes, and offline accessibility improved students' motivation to learn English. The application was found to be more effective in completing learning modules compared to traditional classroom settings (Mahlangu & Mtshali, 2024). This highlights the importance of visually interactive and adaptable content in sustaining engagement among deaf learners.

Gamified learning platforms, such as leaderboards, badges, and collaborative learning features, can enhance motivation among students with hearing impairments. Students can track their progress and compare achievements with peers, leading to increased participation and persistence in learning activities (M. A. S. Khasawneh, 2023). Rewards for completing language tasks also increase intrinsic motivation. SIAGA, a PowerPoint-based gamified learning tool, is effective in improving English speaking skills among deaf students by incorporating visual cues and interactive activities. These findings emphasize the importance of interactive and socially engaging elements in gamified learning tools to sustain motivation (Atar et al., 2021).

This review of studies shows that gamification significantly boosts engagement and motivation among students with hearing impairments in EFL learning. By incorporating game-based strategies, educators can create an inclusive environment. However, future research should explore long-term effects and optimize gamification in inclusive language education. Additionally, developing teacher training programs to effectively implement gamified learning tools is crucial for maximizing their impact on student motivation and learning outcomes.

Effective Gamification Design Strategies for Supporting English Language Acquisition in Students with Hearing Impairments

The effectiveness of gamified learning tools in supporting English language acquisition for students with hearing impairments is influenced by their design. Studies show that visual-based learning, interactive challenges, and adaptive feedback mechanisms are the most effective strategies. Visually rich interfaces, such as animated characters and pictorial

representations of vocabulary, significantly improve language retention among deaf students (Alshaikhi, 2020). Gamification elements like drag-and-drop exercises and interactive storytelling reinforce vocabulary and grammar concepts. These findings align with the multimodal learning theory, suggesting that engaging with multiple sensory inputs improves cognitive processing and language acquisition (Gülbay et al., 2024).

Several studies, including (Mahlangu & Mtshali, 2024), interactive tasks are crucial for experiential learning, as they create a more immersive experience. Studies show that game-based activities like role-playing scenarios, quest-based challenges, and problem-solving games enhance comprehension skills. SIAGA (Speaking Skills Games), a PowerPoint-based learning tool, has been shown to enhance comprehension skills through interactive exercises (Atar et al., 2021). Gamified storytelling, where students construct narratives through visual prompts and sequential gameplay, fosters creativity and reinforces English sentence structures. These hands-on activities cater to the needs of deaf learners, enhancing their understanding of linguistic concepts.

Adaptive feedback mechanisms are crucial in gamification design to support language acquisition. (M. A. S. Khasawneh, 2023) found that personalized feedback, such as automated corrections, visual progress tracking, and in-game rewards, helps students self-regulate their learning. PODclusive demonstrated how immediate feedback, such as achievement badges and progression levels, motivates deaf students to correct mistakes in real-time (Mahlangu & Mtshali, 2024). (Ariyani, 2021) emphasized the importance of adaptive difficulty settings, which adjust game complexity based on the learner's progress, allowing students to develop language skills at a comfortable pace.

Gamification design plays a crucial role in language acquisition for students with hearing impairments. Social interaction and collaborative elements in games, peer-to-peer challenges, and cooperative learning tasks promote a supportive environment (Atar et al., 2021). Community-driven learning, sign-supported communication, and collaborative tasks are beneficial for deaf students. Leaderboards and gamified discussion forums foster achievement and motivation, encouraging continuous learning (Gülbay et al., 2024). Effective gamification design strategies for deaf students in EFL learning include visual-rich content, interactive learning, adaptive feedback, and collaborative elements. Future research should explore the long-term impact of these strategies and explore the use of emerging technologies like virtual and augmented reality.

Conclusion

This literature review highlights the effectiveness of gamification-based technology in English language learning for students with hearing impairments. It emphasizes the integration of interactive storytelling, visual cues, sign language content, and adaptive feedback mechanisms. The review finds that game-based learning applications help bridge communication barriers by providing accessible, visually rich, and interactive environments. Gamification fosters self-directed learning, provides real-time feedback, and creates an immersive educational experience, making it an essential strategy in inclusive education settings.

Studies show that gamification is an effective tool for improving vocabulary retention, reading comprehension, and English-speaking skills among students with hearing impairments. Applications like PODclusive and SIAGA show that incorporating sign language videos, visual storytelling, and interactive quizzes boosts motivation and participation. Adaptive learning models within gamification allow students to progress at their own pace, boosting confidence and reducing learning anxiety.

The study highlights the challenges of implementing gamification in English learning for deaf students, including limited access to high-quality platforms, teacher training, and concerns about excessive screen time. However, with ongoing research and technological advancements, gamification has the potential to be optimized for inclusive education. Future studies should explore the long-term impact of gamification on English language proficiency for students with hearing impairments and explore the potential of emerging technologies like virtual and augmented reality.

In conclusion, gamification-based learning has demonstrated its effectiveness as an interactive and inclusive approach to teaching English to students with hearing impairments. The findings of this study provide strong evidence supporting the integration of gamification in language education as a means of enhancing student motivation, engagement, and academic performance. As the field of digital education continues to evolve, further exploration of innovative gamification strategies will be crucial in ensuring equitable and effective learning opportunities for students with special needs.

One key element of a study is the novelty of research that can be determined by comparing it to research in previous years so that it can be a more comprehensive benchmark for further research on gamification on EFL learner with deaf disability. This research is still extremely rare and one of the few types of research available to writers. There's a great opportunity for future study, particularly in this field.

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