VELES JOURNAL

Vol. 8, No. 1; April 2024
E-ISSN 2579-7484
Pages 293-302
DOI: http://dx.doi.org/10.29408/veles.v8i1.24854

Developing Podcast-Based Learning Media for English Education Among Deaf Students

[1]Fatma Yuniarti, *[1]Dian Pratiwi, [1]Robi Novianto
[1]Universitas Muhammadiyah Pringsewu, Indonesia

***Correspondence:**
dian.pratiwi@umpri.ac.id

Submission History:
Submitted: January 27, 2024
Revised: February 22, 2024
Accepted: March 7, 2024

Abstract

This study addresses the educational challenges faced by deaf students in Indonesia, focusing on developing and implementing a specialised Android-based application, "PODclusive," to facilitate English language learning. The research aimed to create an interactive learning tool that incorporates sign language and textual translations in both English and Indonesian, tailored to the needs of deaf learners. The methodology was a mixed-method approach, combining qualitative and quantitative analyses. The research and development (R&D) framework guided the application's design, development, and evaluation. Participants included a purposive sample of 30 deaf students from SLB N Pringsewu, ensuring a representation across different learning outcomes. The findings revealed that the PODclusive application significantly enhanced the learning experience for deaf students. Students demonstrated improved comprehension of English language concepts, facilitated by the application's use of sign language video content and offline accessibility. The application was evaluated through expert reviews and user testing, receiving high validity scores for content, design, and educational impact. The implications of this study underscore the effectiveness of tailored educational technologies in addressing specific learning needs. The PODclusive application exemplifies how digital tools can enhance accessibility and engagement for deaf students, suggesting that further exploring similar technologies could be beneficial. This research contributes to the broader discourse on inclusive education, advocating for more innovative approaches to support diverse learning environments.

Keywords: Deaf, hard of hearing, English learning, multimedia, inclusive

INTRODUCTION

Education is essential for human development, facilitating life's necessities and enabling individuals to assist one another, fostering effective communication with the surrounding environment, and nurturing the generation of ideas and awareness. (Darling-Hammond et al., 2019). Given these provisions, the state must ensure all community members, including those with special needs, have access to quality education. Inclusion promotes equality and the equitable distribution of resources across political, educational,

social, and economic spheres. Mardiana and Khoiri (2021) highlight that inclusion reshapes education by fostering non-discrimination, equal rights and responsibilities, and enhanced opportunities for all students, particularly those with disabilities, thereby transforming societal perceptions of these individuals.

Nations worldwide are committed to providing equal educational opportunities to all citizens, a commitment that aligns with the United Nations' strategy to achieve Education for All (EFA) through inclusive educational services, reflecting a commitment to public accountability and the protection of citizens' rights (Peppler-Barry & Fiske, 2000; De Beco, 2022). In Indonesia's context, the Constitution of the Republic of Indonesia guarantees the right to access educational services, requiring the national education system to ensure that every citizen can receive quality and equitable education fairly (Zarkasyi, 2018; Amnesti et al., 2023; Itasari, 2019; Siahaan, 2022; Sakti, 2020). Inclusive education is an approach that embodies the 'Education for All' concept by ensuring equitable access to education. Inclusive education aims to achieve educational justice by providing non-discriminatory education that allows children with special needs and their peers to learn together (Haug, 2016). In addition, Rahmatika et al. (2013) add that inclusive education aims to integrate all students, regardless of their disabilities or potential, into a shared learning environment.

Besides, children with special needs are those who require specialised services due to their physical, cognitive, and psychological differences from typically developing children. These children may face challenges that are mental, physical, or material in nature. Specific categories of special needs include impairments related to hearing, speech, vision, mental processes, and physical mobility, among others. Such conditions demand focused attention during education, particularly for children with hearing impairments (Irsyadi et al., 2021a). The term 'hearing impaired' is commonly used to describe individuals who cannot hear due to damage to the auditory system. Therefore, deafness is characterised by an inability to hear sounds spoken by others (Khasawneh, 2021). Deafness is generally defined as a condition of hearing loss that severely limits a person's ability to perceive various stimuli via the auditory channel. This can range from reduced hearing ability to complete absence of hearing (Setyawan, 2019).

Furthermore, teaching English as a foreign language to deaf students requires tailored strategies to accommodate their unique learning needs. Since deaf students primarily process information visually, educators must emphasise visual aids, such as sign language, charts, and multimedia resources (Massa & Mayer, 2006). Researchers at SLB N Pringsewu, a Special Education school in Indonesia, observed that students often respond with sign language while teachers initiate verbal interactions. This mismatch leads to ineffective communication and hinders the students' understanding of the material. It is crucial to implement communication methods that accommodate the needs of deaf children (Silpia & Sari, 2023). Sign language facilitates effective communication and helps express the identity of deaf individuals, acting as a visible marker of their presence in society (Gumelar et al., 2018). However, Irsyadi et al. (2019b) research demonstrates the effectiveness of gamified learning environments for deaf students. In this approach, digital games incorporate sign language and clear visual cues to enhance comprehension and facilitate social interactions.

Deaf children today are particularly adept at using gadgets, which are vital tools for visual learning and reading. The utility of gadgets in education underscores the need for

innovative learning methods tailored to the specific needs of deaf students. (Fibrianti & Wijiastuti, 2020). Researchers are motivated to develop an Android-based learning application called 'Podclusive.' This application is designed to feature sign language video playback and will include sign language movements accompanied by texts in both Indonesian and English. Specifically tailored as a learning aid for deaf students, 'Podclusive' seeks to integrate features deemed essential from the perspective of deaf students, thereby enhancing their educational experience. This research focuses on developing podcast-based learning media to improve English education among deaf students.

METHOD

This study combined a mixed-methods approach with Research and Development (R&D) to create specific products and test their effectiveness. R&D involves using research for needs assessment and effectiveness testing, ensuring the products function beneficially in broader community settings (Sugiyono, 2013). The objectives of this research were to determine (1) the needs of teachers and students, (2) the deficiencies they experience, and (3) their desires. The R&D involves using research for needs assessment and effectiveness testing, ensuring that the products function beneficially in broader community settings (Sugiyono, 2013). The development phase involved designing the Android-based PODClusive application. This process included organising Focus Group Discussions (FGDs) among experts in learning media, media development for PODClusive, and special education, particularly in sign language for people who are deaf or hard of hearing. The qualitative analysis of interview data provided the groundwork for the development of the PODCast Media. Meanwhile, insights from the FGDs were instrumental in shaping the design of the PODClusive application, aiming to innovate English learning for deaf students at SLB Negeri Pringsewu. Following the design phase, experts evaluated the prototype of the PODClusive application to gather feedback and suggestions.

The participants of this study were drawn from a population of deaf students at the senior high school (SMA) level at the Special School (SLB) in Pringsewu. For this research, 30 students were selected to provide a diverse and representative sample of the student body. This sample size is adequate to ensure a thorough investigation while allowing for detailed individual feedback and interaction in the study. Data collection for this study was conducted using interviews and observations. Interviews were held explicitly with English teachers who instruct in classes for deaf students. This approach was chosen to explore the real-life context of language learning among deaf students in the classroom (Sutton & Austin, 2015). Observations were carried out on the 14th and 15th of August 2023 at the Pringsewu State Special School, where it was noted that deaf students at the high school level faced significant challenges in learning English, particularly with vocabulary.

FINDING AND DISCUSSION

Need Analysis

During the observations, it became clear that the students struggled to respond to questions when the class teacher used only verbal communication, without the support of visual aids or sign language. This method proved ineffective, given the students' hearing limitations. Furthermore, the primary use of printed modules as teaching materials contributed to a lack of engagement among the students. It was observed that deaf students

showed a strong preference for learning through dynamic and visually engaging media such as videos and colourful images. This type of media captured their interest more effectively and facilitated a more interactive and enjoyable learning experience (Hidayat et al., 2017). Additionally, using personal gadgets like cell phones in the classroom was suggested to enhance learning satisfaction and participation among deaf students.

The PODclusive application has emerged as a promising educational media platform explicitly tailored for deaf students who primarily communicate through sign language. Expert input from the sign language interpreter ensures that the content is authentic and effective. At the same time, the vibrant colours of the picture and engaging design elements aim to boost students' enthusiasm and facilitate their English vocabulary expansion (Hamer & Lely, 2019). The content for this application is derived directly from English teachers at SLB N Pringsewu, who provide material that is then transformed into engaging, full-colour videos demonstrated by sign language experts. This approach not only aligns with the auditory limitations of deaf students—who rely heavily on visual stimuli due to their condition—but also caters to their preferences for learning through dynamic and visually appealing media. This is in line with Sedláčková et al. (2022), who state that learners who do not have access to this auditory support will need to be supplemented with videos, pictures, and other visual stimuli that compensate for their lack of access to the sounds of the language.

Interviews with teachers have revealed that deaf students typically find English challenging, especially aspects like pronunciation and semantic understanding, and they show a strong preference for learning with Android-based educational media that incorporate interactive videos. This feedback has shaped the development process, which includes an application needs analysis to identify and resolve systemic issues through a structured approach involving problem description, solution development, and specifying system and hardware and software requirements. These efforts ensure that the PODclusive application is a comprehensive, user-friendly educational tool that significantly enhances the learning experience for deaf students.

Design and Development

The application-based learning media development process culminates in the development stage. The use of multimedia increases attention and improves knowledge retention. It improves language skills, including comprehension, vocabulary and expressions (Sert & Boynueğri, 2017). During this phase, the learning media developer constructs and refines the media, focusing on the primary menus and submenus created earlier in the build process. This step is crucial for producing interactive video tutorial-based learning media designed according to the design stage's specifications. Once completed, the learning materials are published and made accessible on Android devices, allowing teachers and deaf students to use them for English language instruction in the classroom.

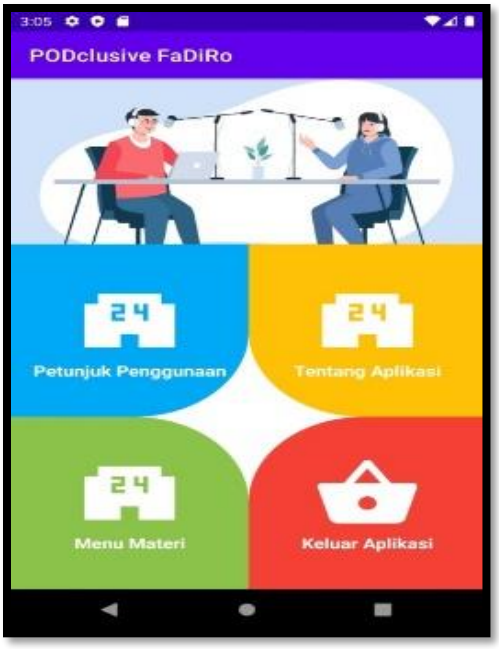

Figure 1. PODclusive app main menu

The design stage involves classifying programs, organising materials, and determining the visual structure. The splash screen, which serves as the initial display during the loading process of the learning media application, appears when the user first launches the program. It provides a visual background before the user is directed to the main page.

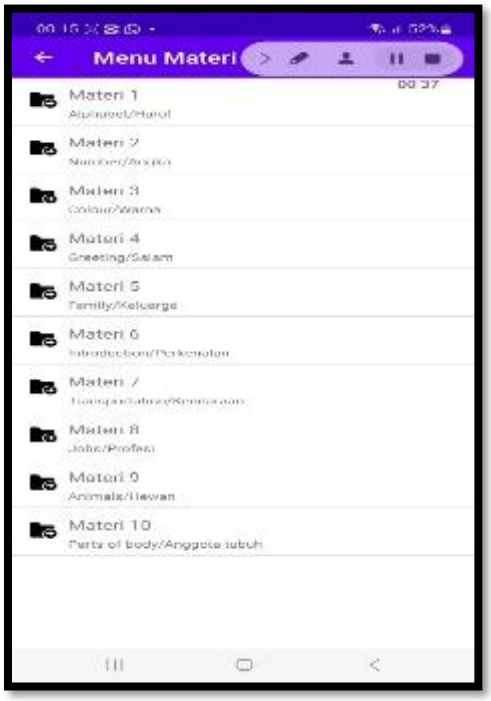

Figure 2. Materials menu

The "Menu Materi" from a learning application lists ten structured educational topics designed to enhance English language proficiency systematically. Starting with "Materi 1:

Alphabet/Huruf," users are introduced to the basics of the English alphabet, crucial for foundational language skills. This is followed by "Materi 2: Numbers/Angka," which covers essential numerical concepts and counting in English. "Materi 3: Colours/Warna" expands the learner's vocabulary by teaching the names of various colours, which helps describe objects and scenes. As learners progress to "Materi 4: Greetings/Salam," they encounter practical phrases and greetings used in daily English communication, fostering conversational skills. "Materi 5: Family/Keluarga" delves into vocabulary related to family relationships, a topic often used in personal interactions. "Materi 6: Introduction/Introduction" equips users with the language needed to introduce themselves and others, a fundamental aspect of social communication.

Further building on practical language use, "Materi 7: Asking Information/Informasi" teaches how to inquire and provide information, enhancing dialogue capabilities. "Materi 8: Jobs/Profesi" introduces terms related to various professions, broadening the learner's understanding of job-related vocabulary. "Materi 9: Animals/Hewan" offers a fun dive into the animal kingdom, teaching common animal names and characteristics, which is engaging and educational. Finally, "Materi 10: Parts of Body/Bagian tubuh" covers the vocabulary for body parts, which is essential for daily interactions and when discussing health topics. Each module is thoughtfully designed to build on previous knowledge, ensuring a comprehensive learning journey through vital areas of the English language.

Implementation and Evaluation

At this stage, the primary activity involves implementing the PODClusive Application to assess its validity and feasibility. This implementation process is essential for testing the product's effectiveness and ensuring that it meets the specific educational needs of its users. The process begins with product validation conducted by a panel of experts. This panel includes learning content experts, learning design experts, learning media experts, and a sign language expert from a language expert, ensuring a comprehensive evaluation from multiple perspectives.

Following the expert validation, the product undergoes a series of trials to test its functionality and impact further. These trials are conducted in two phases: individual and small-group settings. Initially, individual trials are held with four selected students from class X-B of deaf students, comprising two students with high learning outcomes, one with moderate outcomes, and one with low outcomes. This selection aims to gauge the application's effectiveness across educational achievements. The second phase involves a small group trial with seven students from the same class, including three with high learning outcomes, two with moderate, and two with low. This allows for further assessment of the application in a group dynamic. The differentiation in learning outcomes, based on scores provided by the class teacher, helps identify how well the application caters to varying educational needs and informs any necessary adjustments to enhance its educational value. This meticulous testing strategy is crucial for refining the application before its broader release, ensuring it can effectively support the learning process for deaf students.

The PODclusive Application has undergone extensive evaluations by various experts, each contributing their specialised insights to ensure its efficacy and validity. The learning material experts, led by an English teacher from SLB Negeri Pringsewu in class X-B for deaf students, evaluated by calculating the average overall score and adjusting it according to a four-scale convention table. The result was an impressive average score of 3.79, placing it in

the range of 'very good' (25 < M ≤ 4.00). This high rating confirms the application's validity from the perspective of learning material quality.

Similarly, the learning design experts reviewed by averaging and adjusting scores on the same four-point scale. Their evaluation yielded an average score of 3.70, also categorised as 'very good' (25 < M ≤ 4.00), further affirming the application's effectiveness and well-structured design. Learning media experts also provided their assessment, utilising the same methodological approach. They awarded the application an average score of 3.72, again falling within the 'excellent' range. This consistent scoring across different expertise highlights the application's comprehensive appeal and functionality. Lastly, the evaluation from sign language experts, specifically by a sign language expert, resulted in an average score of 3.81. Positioned in the highest category of the evaluation scale (25 < M ≤ 4.00), this score underscores the application's excellence in accommodating the needs of deaf users, making it a validated tool for learning. These evaluations collectively demonstrate the PODclusive Application's high standards and capability to effectively support the educational needs of deaf students, confirming its validity across multiple dimensions of educational design and content.

DISCUSSION

Integrating multimedia in educational settings, particularly for DHH students, represents a critical adaptation to traditional teaching methodologies. These adaptations are essential in addressing the unique learning challenges faced by students with hearing impairments (Shepherd & Alpert, 2015; Bell, 2013; Kusumastuti & Supendra, 2021). By its very definition, visual media involves using lines, colours, shapes, and spaces designed explicitly to convey messages and facilitate learning through visual and kinesthetic modalities (Shabiralyani et al., 2015). This learning mode is particularly beneficial for DHH students who typically rely on visual cues due to their hearing limitations.

In the context of the current research involving the Podclusive application developed for DHH students at SLB N Pringsewu, the application's use of American Sign Language (ASL) videos demonstrates a practical application of visual media. These videos do not merely present English vocabulary but do so in a manner that aligns with the natural learning predispositions of DHH students. The effective use of ASL videos is supported by previous studies, which suggest that DHH students benefit from a learning environment rich in visual aids such as graphics, images, and videos (Nikolaraizi et al., 2013; Luckner et al., 2001). These studies highlight the importance of creating educational content that informs and engages the sensory perceptions of learners with auditory disabilities.

The application’s design, including videos, colourful images, and printed words, facilitates a connection between the vocabulary terms and their real-world applications. This approach allows DHH students to build an associative learning bridge between new words and their tangible representations, enhancing retention and understanding. Moreover, the high validity scores received from experts in content, design, and educational impact during the application's evaluation phase reinforce the effectiveness of this approach. Providing DHH students access to customised educational materials supports their academic development and fosters a more inclusive learning environment (Silvestri & Hartman, 2022).

In conclusion, integrating visual media in the Podclusive application provides compelling evidence of the benefits of tailored educational technologies. It confirms the necessity of continuing to develop and refine tools that accommodate the diverse needs of

all learners, particularly those often marginalised in traditional educational systems. The success of such initiatives highlights the potential for broader application and supports the call for more innovative educational solutions that are accessible, engaging, and effective for DHH students.

CONCLUSION

Based on this research, the PODclusive Application has effectively aided deaf students in class X-B at SLB Negeri Pringsewu in understanding and learning English. The trials show that students can grasp the concepts presented by the application and find it helpful in improving their English language skills. The application incorporates sign language as a primary communication mode, facilitating non-verbal interaction and allowing students to convey and receive messages easily. An added benefit is that the PODclusive application can be used offline, eliminating the need for internet data and making it more accessible for students. The content within the app is straightforward and integrates sign language videos performed by experts, coupled with accompanying texts in both English and Indonesian. This design makes the application user-friendly and effective as a learning tool for deaf students, considering their specific needs and perspectives. Overall, the application is a valuable resource for these students, enhancing their ability to learn English through tailored, accessible educational content.

REFERENCES

Amnesti, S. K. W., Muslim, J., Zulaichah, S., Noh, M. S. M., & Fitriyah, L. (2023). Higher education with disabilities policy: Ensuring equality inclusive education in Indonesia, Singapore and United States. Journal of Human Rights, Culture and Legal System, 3(3), 412-440. http://repository.uin-malang.ac.id/16026/

Bell, D. (2013). Investigating teaching and learning support for students with hearing impairment at a university in the Western Cape (Doctoral dissertation, Stellenbosch: Stellenbosch University). https://scholar.sun.ac.za/handle/10019.1/80004

Darling-Hammond, L., Flook, L., Cook-Harvey, C. M., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791

De Beco, G. (2022). The right to 'Inclusive' education. *The Modern Law Review*, 85(6), 1329–1356. https://doi.org/10.1111/1468-2230.12742

Fibrianti, F. D., & Wijiastuti, A. (2020). Pengembangan media pola kalimat sederhana berbasis android pada pembelajaran sains untuk siswa tunarungu. *jurnal pendidikan khusus,* 15(1).

Gumelar, G., Hafiar, H., & Subekti, P. (2018). Bahasa isyarat Indonesia sebagai budaya tuli melalui pemaknaan anggota gerakan untuk kesejahteraan tuna rungu. *Informasi*, 48(1), 65–78. https://doi.org/10.21831/informasi.v48i1.17727

Hamer, W., & Lely, L. N. (2019). Using pictionary game to increase learners' vocabulary mastery in English language instruction. *Journal of English Education Studies*, 2(1), 43–51. https://doi.org/10.30653/005.201921.30

Haug, P. (2016). Understanding inclusive education: Ideals and reality. *Scandinavian Journal of Disability Research*, 19(3), 206–217. https://doi.org/10.1080/15017419.2016.1224778

Hidayat, L., Gunarhadi, G., & Hidayatulloh, F. S. (2017). Multimedia based learning materials for deaf students. *European Journal of Special Education Research*. https://doi.org/10.46827/ejse.v0i0.575

Irsyadi, F. Y. A., Puspitassari, D., & Kurniawan, Y. I. (2019b). ABAS (Ayo Belajar Sholat) : Game edukasi pembelajaran sholat untuk anak tuna rungu Wicara. *Jurnal Manajemen Informatika/Jamika*, 9(1), 17–28. https://doi.org/10.34010/jamika.v9i1.1537

Irsyadi, F. Y. A., Susanti, L. D., & Kurniawan, Y. I. (2021a). Game edukasi belajar huruf hijaiyah untuk anak kelas 2 di sekolah luar biasa yayasan rehabilitasi tuna rungu wicara Surakarta. *Jurnal Ilmu Komputer Dan Informatika*, 1(1), 43–54. https://doi.org/10.54082/jiki.7

Itasari, E. R. (2019). Fulfillment Of Education Rights In The Border Areas Of Indonesia And Malaysia. Ganesha Law Review, 1(1), 1-13. https://doi.org/10.23887/glr.v1i1.14

Khasawneh, M. a. S. (2021). Problems teaching English to deaf students. *Indonesian Journal of Creative Counseling*, 1(2), 32–42. https://doi.org/10.47679/ijcc.v1i2.107

Kusumastuti, G., & Supendra, D. (2021). The potential of podcast as online learning media for supporting visual impairment students to introduction to education course in Universitas Negeri Padang. *Journal of Physics: Conference Series*, 1940(1), 012129. https://doi.org/10.1088/1742-6596/1940/1/012129

Luckner, J. L., Bowen, S. K., & Carter, K. (2001). Visual teaching strategies for students who are deaf or hard of hearing. *Teaching Exceptional Children*, 33(3), 38–44. https://doi.org/10.1177/004005990103300306

Mardiana, & Khoiri, A. (2021). Pendidikan inklusi bagi anak berkebutuhan khusus di sekolah dasar. *JIPD (Jurnal Inovasi Pendidikan Dasar)*, 5(1), 1–5. https://doi.org/10.36928/jipd.v5i1.651

Massa, L. J., & Mayer, R. E. (2006). Testing the ATI hypothesis: Should multimedia instruction accommodate verbalizer-visualizer cognitive style? *Learning and Individual Differences*, 16(4), 321–335. https://doi.org/10.1016/j.lindif.2006.10.001

Nikolaraizi, M., Vekiri, I., & Easterbrooks, S. R. (2013). Investigating deaf students' use of visual multimedia resources in reading comprehension. *American Annals of the Deaf*, 157(5), 458–473. https://doi.org/10.1353/aad.2013.0007

Peppler-Barry, U. & Fiske, E., (2000). *World Education Forum, Dakar, Senegal, 26-28 April 2000: final report*. UNESCO.

Rahmatika, N., Ratrianasari, D., & Widodo, H. (2020). implementasi kurikulum 2013 di sekolah inklusi sekolah dasar nternational islamic school (INTIS) Yogyakarta. *EduHumaniora: Jurnal Pendidikan Dasar/EduHumaniora*, 12(1), 55–61. https://doi.org/10.17509/eh.v12i1.18596

Sakti, S. A. (2020). Implementasi pendidikan inklusif pada lembaga pendidikan anak usia dini di Indonesia. *Jurnal Golden Age*, 4(02), 238–249. https://doi.org/10.29408/goldenage.v4i02.2019

Sedláčková, J., Tóthová, L., Nunn, N., & Yang, J. (2022). Unit 2: Teaching deaf, deaf and hard of hearing learners in EFL settings. *In DEAFinitely English. Online materials for teachers of English as a Foreign Language for Deaf, deaf and hard of hearing students* (pp. 1–24). https://doi.org/10.5817/cz.muni.m280-0141-2022-2

Sert, N., & Boynueğri, E. (2017). Digital technology use by the students and english teachers and self-directed language learning. *World Journal on Educational Technology*, 9(1), 24–34. https://doi.org/10.18844/wjet.v9i1.993

Setyawan, A. (2019). Komunikasi antar pribadi non-verbal penyandang disabilitas di deaf finger talk. *Jurnal Kajian Ilmiah*, 19(2), 165–174.

Shabiralyani, G., Hasan, K. S., Hamad, N., & Iqbal, N. (2015). Impact of visual aids in enhancing the learning process case research: District Dera Ghazi Khan. *Journal of education and practice*, 6(19), 226-233.

Shepherd, C. M., & Alpert, M. (2015). Using technology to provide differentiated instruction for deaf learners. *Journal of Instructional Pedagogies*, 16.

Siahaan, M. K. (2022). Education for children with special needs. The Explora, 8(2), 14-27. https://doi.org/10.51622/explora.v8i2.642

Silpia, E., & Sari, R. M. (2023). Implementasi komunikasi bahasa isyarat anak tunarungu. *JIIP (Jurnal Ilmiah Ilmu Pendidikan)*, 6(1), 529–535. https://doi.org/10.54371/jiip.v6i1.1413

Silvestri, J. A., & Hartman, M. C. (2022). Inclusion and Deaf and Hard of Hearing students: Finding asylum in the LRE. *Education Sciences*, 12(11), 773. https://doi.org/10.3390/educsci12110773

Sugiyono. (2013). *Metode penelitian kuantitatif, kualitatif dan R&D*. Alfabeta.

Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. *Canadian Journal of Hospital Pharmacy, 68*(3). https://doi.org/10.4212/cjhp.v68i3.1456

Zarkasyi, A. (2018). Policy on Access, Quality and Competitiveness Islamic Education. EDUCATIO: Journal of Education, 3(1), 64-83. https://doi.org/10.29138/educatio.v3i1.4