TEACHING ENGLISH AS A FOREIGN LANGUAGE TO DEAF AND HARD-OF-HEARING STUDENTS IN INDONESIAN CONTEXTS

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Abstract:

Due to linguistic difficulties, students with hearing impairments face unique challenges when studying English as a foreign language (EFL). This study examined how hearing-impaired junior high school students in Indonesia were taught and the barriers faced by teachers when teaching students in English. The study employed a descriptive qualitative methodology involving nine teachers from schools for special needs education in Bali. This study applies multiple techniques, including questionnaire distribution, interviews, observations, and document analysis. The study shows the absence of teachers' prior experience in developing curriculum and syllabus. Other main issues were related to teachers' and students' lack of sign language understanding, lack of learning materials, and students' learning characteristics. The teachers primarily used grammar-translation methods and applied ineffective classroom management. By these findings, policymakers need to review the English curriculum, provide special training for teachers, and design the classroom to satisfy the unique learning needs of the students.

Abstrak:

Keterbatasan linguistik menyebabkan siswa dengan gangguan pendengaran menghadapi tantangan ketika belajar bahasa Inggris sebagai bahasa asing (EFL). Penelitian ini menganalisis pembelajaran bahasa Inggris untuk siswa tuna rungu pada tingkat SMP serta hambatan yang dihadapi guru ketika mengajar siswa. Penelitian ini menggunakan metode kualitatif deskriptif yang melibatkan sembilan guru dari sekolah luar biasa di Bali. Adapun teknik pengumpulan data yang digunakan adalah penyebaran kuesioner, wawancara, observasi, dan analisis dokumen. Hasil penelitian menunjukkan kurangnya pengalaman guru dalam mengembangkan kurikulum dan silabus untuk pengajaran bahasa Inggris bagi siswa tuna rungu. Masalah lainnya terkait dengan terbatasnya pengetahuan bahasa isyarat oleh guru maupun siswa, ketersediaan materi pembelajaran yang kurang, dan karakteristik belajar siswa yang unik. Guru umumnya menggunakan metode penerjemahan dan penerapan manajemen kelas yang kurang efektif. Sejalan dengan temuan tersebut, pembuat kebijakan perlu meninjau kembali kurikulum bahasa Inggris, memberikan pelatihan untuk guru, serta merancang ruang kelas untuk memenuhi kebutuhan khusus bagi siswa tuna rungu.

Keywords:

English as a Foreign Language, Deaf and Hard of Hearing, Indonesian Students

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INTRODUCTION

English has become one of the most popular foreign languages taught in schools and tertiary education in non-English-speaking countries because of its crucial role in international communication, both in public and private contexts. The importance of learning a foreign language similarly applies to children with special needs, such as deaf and hard-of-hearing children. The responsibility of second language professionals is to acknowledge and address the requirements of this particular group with special needs and to actively promote equal opportunity in foreign language education. This can be achieved by thoroughly examining their circumstances, increasing awareness of their needs, and proposing effective solutions to the difficulties they encounter (Csizer & Kontra, 2020). The Indonesian government has also begun to pay attention to the importance of learning English as a foreign language for students with hearing impairments.

According to the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia's Decree number 56/M/2022 addressing rules for curriculum implementation in the framework of learning recovery, English is an optional subject given to junior high students with special needs. This curriculum adheres to the national language policy, which encourages all Indonesians, including those with special needs, to be multilingual. This policy emphasizes the use of Indonesian as the national language, the preservation of indigenous languages, and proficiency in foreign languages (Bedir, 2019; Fauyan, 2019). In Indonesian special needs schools, English as a foreign language is provided following the curriculum. English instruction begins in the seventh grade and continues through high school.

According to an initial interview with nine special needs school principals from nine different regencies and one municipality in Bali Province, students, including Deaf and Hard-of-Hearing (D/HH) students, are taught English as a foreign language. However, in these special needs schools, most English as a Foreign Language (EFL) teachers graduated from pedagogical institutions with a major in English Language Education in their preservice training; they were not trained to teach English to D/HH pupils or students with special needs. English is taught in these schools for 70 minutes per week.

Although English is taught as a foreign language, little is known about how it is taught to D/HH students from non-English speaking nations (Kontra, 2013). Studies on teaching English to D/HH students conducted in an Indonesian setting mostly suggested the use of multimedia, visual supports, and modifying the classroom environment (Adi, Unsiah, & Fadhilah, 2017; Dewi, Yawisah, & Siregar, 2019). Studies on how teachers taught English were still limited to teaching English vocabulary (Suryanti, Sofyan, Rahmah, & Dahliah, 2023; Syukri & Humaera, 2019). Teachers were faced with challenges such as getting students' attention and understanding words from students' lip movements (Adi, Unsiah, & Fadhilah, 2017). Another study identified that it was difficult for students to pronounce words that required teachers to use sign language or body movement (Suryanti, Sofyan, Rahmah, & Dahliah, 2023). In overcoming these challenges, teachers performed repetition, lip reading, gesture, body movement, and used learning media (Adi, Unsiah, & Fadhilah, 2017) as well as gaining students' motivation to learn English (Syukri & Humaera, 2019).

In many countries, English is the third language in the linguistic repertoire of D/HH students, following sign language (SL) and the national language (Dotter, 2008; (Kontra, Csizer, & Piniel, 2015). In the Indonesian context, English for hearing-impaired students is the fourth language after the Indonesian language (Bahasa Indonesia), SIBI or BISINDO, the Indonesian sign languages, and local languages. Several special needs schools in Indonesia have incorporated English into their curriculum, introducing it in high schools, ranging from the eighth to the tenth graders (Adi, Unsiah, & Fadhilah, 2017; Suryanti, Sofyan, Rahmah, Dahlia, 2023). It poses challenges for D/HH students in mastering English, making the learning process more complex and demanding. These challenges serve as a foundation for the current research, which seeks to describe teaching English as a foreign language to D/HH students.

Sultanbekova (2019) has shed some light on the fact that EFL teachers face obstacles when teaching hearing-impaired students, such as a lack of understanding of SL and the cognitive and learning characteristics of D/HH students. The school buildings and classroom environments are also become problematic because they are not designed to fulfill the pupils' unique learning needs. In addition, a lack of curriculum design experience has surfaced as a concern in teaching English as a foreign language. In most cases, schools fail to assist students with hearing impairments. This assistance might take the form of materials and technical supplies, as well as school support that involves instructions relating to students' diagnoses (Tomic, Posedi, & Geld, 2018). Therefore, to better understand how EFL is taught to D/HH students, including the teacher's planning, resources used, implementation, difficulties, schools, and stakeholder support, additional studies are necessary.

Taking into account the context shown above, it can be stated that in Indonesian settings, English teachers do not have training in teaching D/HH students. After Indonesian, Sign Language, and a local language (in this study, students learn Balinese), English is the fourth language in their linguistic repertoire. As a result, it is essential to examine the experiences of English teachers in teaching English as a Foreign Language (EFL) to students with D/HH. Such narratives must present a comprehensive picture of

how EFL is taught to D/HH students in Indonesian special needs schools.

To direct the investigation, the study posed the following questions:

- 1. How was English as a Foreign Language taught to Deaf and Hard of Hearing students?
- 2. What are the challenges faced by EFL teachers in teaching English to Deaf and Hard of Hearing students?

The findings may motivate researchers to explore the pedagogy of teaching English as a foreign language to students from a range of backgrounds, particularly those who are deaf or hard of hearing. Furthermore, this study offers valuable insights that might serve as a foundation for developing policies for the instruction of English as a foreign language for students with special needs. This research provides an excellent resource for creating curriculum and instructional materials specifically tailored to students with hearing impairments who are learning English.

RESEARCH METHOD

Research Design

The study employed descriptive qualitative methodology using a phenomenological approach. The researchers identified the essence of human experiences regarding a phenomenon described by the participants (Creswell, 2009). According to Burns & Grove (2009), qualitative research is a methodical and subjective method for highlighting and explaining daily life events and enhancing their significance. Qualitative research permits researchers to delve deeply into behavior perspectives and life experiences to understand the complexities of a situation within a holistic framework (Holloway & Wheeler, 2002). The phenomenon observed in this study was teaching English as a foreign language to D/HH students. Furthermore, the life experiences observed in this study were the teachers' experiences and practices in teaching English to students with hearing impairment in the Indonesian context.

Setting and Participants

This study was conducted in Bali Province and involved nine special needs schools. The schools accommodate students with D/HH. This study was conducted in Bali because nine special needs schools practice trilingual education in support of the national language policy. This policy emphasizes the use of Indonesian as the national language, preservation of indigenous languages, and proficiency in foreign languages (Bedir, 2019; Fauyan, 2019). Thus, the languages taught to the students include Indonesian, Balinese, and English. According to the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia's Decree number 56/M/2022 addressing rules for curriculum implementation in the framework of learning recovery, English is an optional subject taught to junior high students with special needs.

Nine teachers who teach English to D/HH students at these special needs schools participated in the study. The teachers consisted of four females and five males (see Table 1). The participant recruitment is based on the following three criteria: 1) English teachers

must have a minimum of one year of experience teaching D/HH students in special needs schools; 2) the special needs school where the English teacher is employed must be a state school; and 3) one English teacher from each regency represents one special needs school. The researchers then sent a consent letter explaining the purpose of the study. The participants were also informed that their identities would be coded to protect the anonymity of their information.

Table 1. Participants' demographic information

Table 1.1 at desparts demographic information					
Participants	Gender	Years of Teaching	Years of Teaching		
		English	English for D/HH		
			Experience		
Teacher 1	Female	16 years	11 years		
Teacher 2	Female	10 years	10 years		
Teacher 3	Female	3 years	3 years		
Teacher 4	Female	13 years, 8 months	11 years		
Teacher 5	Male	2 years, 2 months	1 year		
Teacher 6	Male	6 years, 4 months	4 years		
Teacher 7	Male	5 years	5 years		
Teacher 8	Male	6 years	6 years		
Teacher 9	Male	1 year	1 year		

Data Collection

To address the two research inquiries at hand—1) How was English as a foreign language taught to Deaf and hard-of-hearing students? and 2) What are the challenges faced by EFL teachers in teaching English to Deaf and hard-of-hearing students? Triangulation data collection methods were utilized in this study to obtain credible results, including the distribution of questionnaires via Google Forms, interviews, observations, and document analysis. All four methods were implemented to collect data for each inquiry. First, the data were gathered through Google Forms consisting of 24 open-ended questions. Open-ended questions are unstructured survey questions that give the responder greater space to react in an open-text format, allowing for more elaborate responses. The Google form responses were then confirmed with in-person interviews (for the instructors from the Buleleng regency) and phone calls (for the teachers from the rest of the regencies in Bali). Semi-structured interviews were used to elicit the participants' experiences and opinions with open-ended questions. This enables the flexibility of the participants in expressing their opinions and experiences. The questions covered two main parts, 1) teaching of English as a foreign language to Deaf and Hard of Hearing students, and 2) challenges faced by EFL teachers in teaching English to Deaf and Hard of Hearing students. The surveys and interviews with the teachers were conducted in Indonesian to lessen fear and increase the likelihood of obtaining insightful data because the participants would find it easier to express themselves in their native language (Utami & Prestridge, 2018). Another data collection method employed was observation. During the observation, the researchers aimed to obtain an accurate and genuine depiction of

English instruction for D/HH students. The document analysis was performed to assess or evaluate printed and electronic (computer-based and Internet-transmitted) materials (Bowen, 2009). The English curriculum, syllabus, and teaching agendas were examined in this study.

Data Analysis

In data analysis, open-ended data are gathered by asking participants general questions and constructing an analysis based on their responses. Phenomenology research involves analysing significant statements, formulating meaning units, and developing essence descriptions (Creswell, 2009). In this study, data analysis follows six general steps proposed by Creswell (2009): (1) organising and preparing the data for analysis, which includes sorting and arranging the data, transcribing interviews and typing up field notes; (2) reading over all of the information to get a feel for the information as a whole and to think about what it could represent in the bigger picture; (3) coding the data into themes; (4) using the coding process to provide a description of the setting or people, as well as categories or themes for analysis; (5) giving detailed discussion of several themes, representing the data, using visuals, figures or tables; and (6) making interpretation or meaning of the data. The data in this study are classified into three themes, namely (1) the teaching of English as a foreign language to Deaf and Hard of Hearing students, and (2) the challenges faced by EFL teachers in teaching English to Deaf and Hard of Hearing students.

RESULTS AND DISCUSSION

Result

This study investigated the experiences of EFL teachers in Indonesia who were teaching English to D/HH students. The following research issues were addressed using Google Forms to distribute questionnaires, interviews, observations, and document analysis: 1) How were Deaf and Hard of Hearing students taught English as a foreign language? 2) What challenges do EFL teachers encounter when teaching English to Deaf and Hard of Hearing students? The findings were summarized to address the research questions, and the teachers' experiences were highlighted, examined, and narratively presented.

Teaching English to D/HH Students in Indonesia

D/HH students in Indonesia are taught English as a foreign language because it agrees with the national language policy. According to this policy, students are expected to be able to communicate in Indonesian, the national language, as well as be proficient in a local language, and a foreign language. Table 2 displays the results of how English teaching for D/HH students in Indonesia is conducted.

Table 2. Teaching English for D/HH students

Theme	Table 2. Teaching English for Categories	Summary of the data
English teaching for D/HH students	Curriculum	Learning outcomes based on the Merdeka Curriculum
	Teaching/Learning materials	 Book published by the Ministry of Education and Culture in 2016. Teachers search for materials on the internet.
	Teaching Techniques	 Use of the grammar-translation method Drill/repetition
	Teaching Strategies	 Use visual materials such as pictures or real images Audiovisual Google translates game
	Means of instruction	 Indonesian and/or SIBI (Sistem Isyarat Bahasa Indonesia)/the Indonesian sign language system Lip-reading
	Use of sign language	SIBI (Sistem Isyarat Bahasa Indonesia)/the Indonesian sign language system is used to teach English
	Classroom Management	 There were almost no visuals on the walls written in English. Table Row layout/classical sitting arrangement
	Language skills taught to students	Mainly introduce vocabulary and spelling.
	Assessment	 Reinforcement is used. Praise the students when they can respond. Written test Quizzes The scale used for grading was 1-10. One is the lowest number, and ten are the highest.

English proficiency is crucial for communicating effectively in today's increasingly globalized society. The majority of deaf and hard of hearing students require some level of English proficiency to fully engage in today's multilingual, multicultural, and technologically advanced society (Domagala-Zysk, 2016). In terms of teaching English as a foreign language, nine categories were observed, and teachers were asked questions: 1) curriculum, 2) teaching learning materials, 3) teaching techniques, 4) teaching strategies, 5) classroom management, 6) means of instruction, 7) use of sign language, 8) language skills taught to students, and 9) assessment.

According to the participant interviews, English teaching for D/HH students is based on the Merdeka Curriculum. The learning outcomes of students with special needs are stated in the Decree of the Head of the Education Standards, Curriculum and Assessment Agency, Ministry of Education, Culture, Research and Technology No. 033/H/KR/2022 on Amendments to the Decree of the Head of the Education Standards, Curriculum and Assessment Agency, Ministry of Education, Culture, Research and Technology No. 008/H/KR/2022/ on learning outcomes in early childhood education, primary education, and secondary education, in Merdeka Curriculum. According to the curriculum, English for special education is provided to facilitate students to learn English more comprehensively and focused. This English for special education course is expected to help students achieve the targeted academic abilities and 'life skills' needed to live in a fast-changing world and technology. In addition to life skills, learning English for special education emphasizes 21st Century skills (critical thinking, creative, communicative, and collaborative), development of character, and literacy. This English teaching provides opportunities for learners to develop their English language skills. The abilities developed are the three pairs of language skills domains: speaking and listening, reading and viewing, and writing and presenting. The curriculum states that the approach used in learning English for special education is genre-based. This approach focuses on texts in various modes, whether oral, written, visual, audio, or multimodal.

The curriculum divides students with special needs into six phases with learning outcomes for each phase: Phase A (mental age in average seven years, generally grades I and II), Phase B (mental age in average eight years, generally grades III and IV), Phase C (mental age in average eight years, generally grades V and VI), Phase D (mental age in average nine years, generally grades VII and IX), Phase E (mental age in average ten years, generally grades X), and Phase F (mental age in average ten years, generally grades XI and XII). The learning outcomes for Phases A, B, and C are that students understand how spoken English can assist them in interacting with others in everyday social and classroom settings. In Phase D, learners comprehend and respond to simple English texts orally, in writing, and visually. They understand the letter– sound relationships of vocabulary in simple English to interact and communicate with others in everyday social and classroom contexts. At the end of Phases E and F, students use written, spoken, and visual English to communicate appropriately, given the situation, purpose, and audience.

After reviewing the curriculum, the teacher interviews were conducted. They were questioned regarding the resources that the students and teachers used for instruction and learning. They informed that the teachers determined the flow of the learning objectives and learning materials depending on the learning outcomes. However, teachers may use other teachers' content or modules from the *Merdeka Mengajar* platform at https://guru.kemendikbud.go.id. The results of the interviews also indicated, however, that some teachers still use a book published by the Ministry of Education and Culture in 2016, based on the 2013 Curriculum. Seven teachers from nine participants informed that they teach English with Ministry's book, as seen in the following excerpts.

(1) 'I downloaded the book published by the Indonesian Ministry of Education and Culture at https://pmpk.kemdikbud.go.id (Teacher 1, Teacher 2, Teacher 4, Teacher 5, Teacher 6, Teacher 7, and Teacher 8)

It was also stated that the book is not intended exclusively for D/HH students.

(2) 'I don't think the book is intended exclusively for D/HH students. The included materials are based on regular or normal students. It is, therefore, challenging to apply it to D/HH students' (*Teacher 5*).

Two teachers reported searching the internet for instructional materials. They look for resources that match the learning outcomes demanded by the curriculum.

In terms of teaching methods, the teachers primarily used the grammar-translation method, which was supplemented by drills or repetitions. The results of the interview can be seen in excerpts (3)- (5).

(3) 'I write Indonesian words on the board and then translate them into English' (*Teacher 6, Teacher 7, Teacher 8, Teacher 9*)

Two teachers combined the grammar-translation method and word visualization to introduce new vocabulary.

- (4) 'I write the English word and its Indonesian equivalent on the board, and then I show them a picture of the word that I downloaded from the internet or use a PowerPoint presentation' (*Teacher 1, Teacher 5*).
- (5) 'I use pictures or videos' (Teacher 4)

Some studies revealed that the grammar-translation method was applied in teaching D/HH students across several educational levels, including elementary and senior high schools (Christina, 2019; Hamidah & Nurdiawati, 2021; Muzaky, 2023; Subin & Liang-Itsara, 2022). Students' comprehension of the foreign language is believed to improve when it is translated into their first language. In the grammar-translation method, the teacher will first demonstrate the word into gesture, then their students will repeat it, and the last, the teacher will ask the students to guess what the term means. It can be repeated until the students fully understand what is being taught (Hamidah & Nurdiawati, 2021). The grammar-translation method can be considered for D/HH students because of its visual nature and structured approach, which can help build strong written language skills, grammar awareness, and communicative competence (Subin & Liang-Itsara, 2022).

The grammar-translation method can be particularly beneficial for students with D/HH when used in combination with other methods because it provides a strong foundation in written language skills, which can be crucial for effective communication among DHH individuals. By pairing it with methods such as sign language instruction or visual aids, DHH students can gain a comprehensive understanding of grammar and vocabulary, aiding their reading and writing abilities while also enhancing their ability to express themselves in sign language or other visual communication modalities. This is in line with studies where teachers have also integrated several methods, including the lexical approach (Christina, 2019), total physical response (Hamidah & Nurdiawati, 2021),

and sign language (Tambunan, 2022), to accommodate the unique needs of D/HH students. According to Krashen's Natural Approach principles, the way teachers communicate plays a crucial role in providing learners with examples of how to use lexical phrases for various practical purposes. In total physical response, the teacher shows students how to use the words being taught by using orders or body language. Students can learn by observing actions and performing the actions. A child's ability to listen effectively develops before their capacity to communicate verbally. This development occurs as children are gradually required to respond physically to spoken language according to their parents' order. Thus, once a foundation in auditory comprehension has been established, speech emerges effortlessly and naturally. As part of the whole physical reaction, the instructor will gradually introduce commands while simultaneously acting them out in front of the class. Rahmah & Kholiq (2018); Bergeron, Berland, & Demers (2020) mentioned that the most important methods of communication for deaf individuals are sign language, oral method, and total communication. Sign language, a natural language for the deaf, is characterized by hand positioning, shape, movement, and palm direction. The oral method focuses on improving auditory skills and speaking through techniques such as speech reading and auditory training. Total communication offers flexibility, adapting to individual abilities and situational needs by combining various communication methods. These options empower deaf individuals to choose an approach that aligns with their preferences and facilitates effective communication in diverse contexts. The findings of the current research reveal a deficiency in the integration of GTM with other methods, as evidenced by the absence of designated learning materials for English instruction specified to D/HH students. Besides, although GTM is paired with sign language, the sign language used was Indonesian sign language SIBI or BISINDO. In the researchers' point of view, English teaching for students with hearing impairments should be paired with international sign language such as International Sign (IS) or American Sign Language (ASL).

Through surveys, interviews, and classroom observation, it was discovered that strategies for teaching English as a foreign language to D/HH students include the use of visual materials such as pictures or realia, audiovisual, games, and internet resources such as Google Translate. Some teachers permit students to bring mobile phones into the classroom, but others do not. The teachers said,

- (1) 'I let students bring mobile devices into the class' (Teacher 1, Teacher 2, Teacher 3 Teacher 7, Teacher 8)
- (2) 'Students are not permitted to use mobile devices in my lesson' (Teacher 4, Teacher 5, Teacher 6, Teacher 9)

Teachers allow students to use mobile devices because they sometimes display visual content like pictures, cartoons, and videos. This approach can boost visual creativity and intelligence. Mobile devices offer various apps and features, including ones for communication like sign language facilitation, text-to-speech functions, and visual alerts for sounds (Kunjumon & Megalingam, 2019; Tiku, Maloo, Ramesh, & Indra, 2020). They also provide educational apps and content with captions or sign language support, aiding language development. Furthermore, they enable DHH children to communicate with

peers and educators through video calls and messaging, promoting social interaction (Kunjumon & Megalingam, 2019). Ultimately, technology use is vital for engaging students in learning, providing tools for academic success, and reducing dependency on teachers (Shepherd & Alpert, 2015; Ng'ethe, Blake, Glaser, 2015).

When delivering English lessons, the teachers use both the Indonesian language and the sign system for the Indonesian language, Sistem Isyarat Bahasa Indonesia (SIBI). However, most of the teachers reported that their skills in sign language are very limited because they learn sign language by autodidactic learning. The teachers said,

- (1) 'I employ Sistem Isyarat Bahasa Indonesia (SIBI), the sign system of the Indonesian language when teaching English' (Teacher 5, Teacher 7, Teacher 9)
- (2) 'I teach using Indonesian. I also use SIBI, but not always. I have little sign language knowledge' (Teacher 1, Teacher 2, Teacher 3, Teacher 4, Teacher 8)
- (3) 'I use the Indonesian language, I do not know sign language. I speak slowly when I teach so that my students can read my lips.' (Teacher 6)

All teachers have acknowledged that they do not meet the requirements to teach D/HH students. This study supports the findings of Bedoin (2011), who discovered that most teachers lacked the necessary qualifications to work with D/HH students and recommended that teacher training programs include a specific credential in teaching English as an FL to D/HH learners.

In terms of classroom management, observation revealed that there were almost no English-language visuals on the walls, no English-language posters, or images with English text. The seating arrangement then employs a table row layout. The teachers said that the table row arrangement is most frequently employed during the academic year. In creating an ideal classroom environment for students with hearing impairment, it is important to consider a class size of eight to ten students (Saleem, Sajjad, & Alwi, 2019). This manageable size fosters a conducive learning environment. The semi-circular arrangement of desks plays a vital role in facilitating eye contact between the teacher and students, which is essential for effective communication and discipline management. This setup allows the teacher to effortlessly engage with each student, promoting a sense of inclusion.

Reading, writing, introducing vocabulary, and spelling is the language abilities taught to the students. However, some teachers merely teach vocabulary and spelling, with no emphasis on reading and writing.

- (1) 'I teach reading, writing, introducing vocabulary, and spelling' (Teacher 1, Teacher 2, Teacher 5, Teacher 6, Teacher 9)
- (2) 'I introduce vocabulary and spelling' (Teacher 3, Teacher 7, Teacher 8)
- (3) 'I only teach vocabulary' (Teacher 4)

Language development can be challenging for children with DHH conditions,

especially those born deaf or who experience hearing impairment early in life. As highlighted by Christina (2019), the primary focus lies on the development of reading and writing skills, a theme further emphasized by Hamidah & Nurdiawati (2021), who concluded that reading and writing are the focus of English skills taught to DHH students. Proficiency in reading and writing plays a pivotal role in the journey of language acquisition, as it acts as a bridge between spoken and written communication forms. By improving their ability to comprehend and express ideas through writing, children can overcome limitations in their spoken language, ultimately enhancing their overall communication and comprehension abilities.

Regarding the assessment, the teachers employ a variety of methods to evaluate students. When students participate in class, teachers consider how engaged they are and pay attention to how they behave when participating in lessons. The teachers use multiple-choice examinations, quizzes, and spelling tests.

Challenges Encountered by EFL Teachers

The findings from the questionnaire, interviews, and observations indicate that EFL teachers encounter numerous challenges when teaching students who are deaf or hard of hearing (D/HH). Table 3 provides an overview of the diverse issues encountered by the teachers.

Table 3. Challenges faced by EFL Teachers

Table 5. Challenges faced by EFL Teachers				
Theme	Categories	Summary of the data		
Challenges	Use of Sign Language	1. The teachers have no educational		
faced by EFL		background to teach D/HH students,		
teachers		and they have no formal training in		
		using sign language.		
		2. The teachers are self-taught in sign		
		language.		
		3. The teachers and students use		
		different sign language.		
	Lack of Teaching and	The absence of English textbooks or		
	Learning materials	other materials for teaching English as a		
		foreign language to D/HH students.		
	The weak memory of the	The students tend to forget what they		
	D/HH students	have learned. Students have short		
		memory.		
	Lack of linguistic	The students lack proficiency in		
	proficiency in Indonesian	Indonesian. Therefore, it is challenging		
		for teachers to teach English to students		
		who do not understand the Indonesian		
		equivalent.		
	Lack of facilities	1. The classroom does not have any		
		electronic devices.		

		2. Each class has one whiteboard.
Facilities but	devoid of	The government provides Chromebooks
content		but does not provide learning materials
		and content for education.
inappropriate	classroom	The classroom is relatively small. Thus,
arrangement		the teachers are unable to adjust the
		seating arrangement.

Knowledge of sign language (SL) is one of the primary issues in the practice of teaching English as a foreign language. The major focus of each participant in this investigation was English as a foreign language. They speak Indonesian, Balinese, and English fluently. However, they lack SL proficiency. The following statements reflect the self-reported competency levels of the participants in sign language.

- (1) 'Mastering sign language is a challenge and an obstacle that I often encounter, then the difficulty of students to understand the writing on the whiteboard or reading texts in the book, which requires me to visualize or provide pictures so that they understand' (Teacher 5).
- (2) 'The first obstacle is limited communication because teachers and students still do not know sign language' (Teacher 6)
- (3) 'I have little knowledge of sign language' (Teacher 3, 4, and 8)

Based on the conducted observation, it also turns out that most teachers teach English using SIBI or BISINDO, the Indonesian sign language. In other words, they will sign the English words in SIBI or BISINDO if the teachers know how to sign them. The participants successfully incorporated English vocabulary through finger-spelling, as observed during the in-class sessions. The Indonesian sign language system's fingerspelling method employed in SIBI is similar to that used in American Sign Language (ASL). The characteristics of the Indonesian EFL teachers in this study supported the findings reported in studies conducted in non-English speaking nations by Adi, Unsiah, & Fadhilah (2017), Bedoin (2011), Sultanbekova (2019). Moreover, the instructors lack official qualifications to educate children with hearing impairments (Bedoin, 2011). Furthermore, it should be noted that the teachers who participated in this research were individuals with normal hearing abilities and did not possess a high level of expertise in sign language. According to Bedoin (2011), the employment of teachers lacking expertise in teaching students with hearing impairments was a result of a shortage of educated teachers proficient in Sign language. This practice was observed in both normal and special schools in France. A comparable situation has been found in schools in Kazakhstan, as revealed by Sultanbekova (2019). The current study's findings reveal a similar situation observed in Indonesia. The teachers in this present study also faced the same challenge where they did not have special training to teach students with special needs, especially those who are deaf or hard of hearing. They also were not trained in International Sign (IS) or American

Sign Language (ASL) to teach English subjects. International Sign (IS) and American Sign Language (ASL) are the lingua franca utilized by the deaf community during international meetings or events (Kusters, 2021). This lack of specific training makes it hard for them to meet the needs of these students and communicate using IS or ASL. It highlights the importance of providing teachers with the right training and resources to support students with special needs, particularly in EFL teaching.

In addition to the limited skill in sign language, the teachers have also reported an absence of English textbooks and supplementary resources for teaching English as a foreign language to students who are deaf or hard of hearing. This agrees with Adi, Unsiah, Fadhilah (2017), who found teachers' lack of material adaptation to be one of the challenges in teaching English to D/HH children. The following statements reflect the lack of learning materials for teaching English.

- (1) 'English books are not available specifically designed for deaf students' (Teacher 6)
- (2) 'Lack of availability of learning materials' (Teacher 9)

In addition to deficiencies in instructional resources, schools often face a dearth of adequate facilities. The classroom is completely lacking in any form of electronic equipment. A single whiteboard is allocated to each class. The size of the classroom is relatively small. Consequently, the teachers are incapable of modifying the seating arrangement. D/HH students heavily rely on their visual senses for learning. Consequently, the teachers should consider to take into account factors such as light reflection within the classroom and adopt seating arrangements in a circular or semi-circular form. This setup not only enhances visibility but also promotes interaction among students, aligning with the visual learning preferences of D/HH students.

One further challenge faced by teachers is the unique characteristics exhibited by students who are deaf or hard of hearing (D/HH).

- (1) 'Limitations in understanding vocabulary' (Teacher 1)
- (2) 'Short-term memory' (Teacher 2)

The teachers admit that their students tend to forget what they have learned. Somad in Jamilah (2013) stated that the memory capacity of deaf children is lower for verbalized information, coupled with their limited ability in abstract thinking. The sense of sight plays a crucial role in information processing during teaching and learning activities, influencing the learning outcomes of students. The academic performance of students with hearing impairments has been found to have a negative impact on their memory processes (Edwards & Anderson, 2014). Marcelino, Sousa, & Costa (2019) identified that working memory, short-term memory, and executive functioning were significantly lower in deaf students than in hearing students. Thus, by maximizing the visual memory of deaf students, compensating for weaknesses, and striving to restore fundamental information processing skills, linguistic competence, and academic achievement can be enhanced (Hamilton, 2011).

Another challenge faced by EFL teachers in teaching English to D/HH students is that the students lack proficiency in Indonesian.

- (1) 'Students easily forgot some vocabulary after being taught' (Teacher 5)
- (2) 'Students find it difficult to understand words related to abstract concepts and mental states both in English and Indonesian' (Teacher 9)

It is challenging for teachers to teach English to students who do not understand the Indonesian equivalent. The challenges include the complexity of abstract concepts, the inadequacies of educational materials, and the nuanced linguistic features of learners (Zakia, Sunardi, & Yamtina, 2017). Abstract ideas can be especially challenging for D/HH students, as they often rely on visual and concrete experiences for comprehension. Many textbooks and instructional materials fail to consider this, leaving D/HH students struggling to grasp these intricate concepts. Furthermore, linguistic differences and unique features of sign language or spoken language proficiency among D/HH students often go unaddressed in mainstream materials. To overcome these challenges, it is imperative to develop inclusive educational practices that encompass specialized materials, teacher training, and collaboration among educators and experts in the field of deaf education, ensuring that D/HH students have equitable access to quality education.

The research findings on teaching practices validate earlier conclusions that using a combination of Indonesian sign language and speech as a means of communication with DHH students has long been recognized as an effective approach for enhancing their language skills (Affandi, 2018). Marschark & Spencer (2006) noted that the practice of employing multiple modalities primarily aimed at accommodating and mitigating the challenges posed by delayed language development in early-aged D/HH students. Additionally, one of the reasons teachers often switch between sign language and English or use both languages simultaneously is because both educators and students may not be fully proficient in both languages, as highlighted by Napier (2007). This agrees with Adi, Unsiah, & Fadhilah (2017), who stated that even after being translated into Indonesian, some of the words were still hard for the children to understand.

Besides linguistic barriers, lack of facilities also contributes to the challenges faced by EFL teachers in teaching English to D/HH students, as stated by some teachers as follows.

- (1) 'Lack of facilities to support students' learning. Each class has one whiteboard' (Teacher 4)
- (2) 'The classroom does not have any electronic devices' (Teacher 8)
- (3) 'The government provides Chromebooks but does not supply learning materials and content for education' (Teacher 9)

The lack of modern educational resources and technology in schools is a recurring issue, and this finding aligns with previous research conducted. Highlight the significance of technology in aiding Deaf and Hard of Hearing (DHH) students in grasping complex science concepts, underscoring the potential benefits of integrating modern tools into their learning experiences. Additionally DHH students excel in visual communication and learning through guided vision. Therefore, it becomes evident that classroom equipment

emphasizing visual elements is essential to cater to the unique learning needs of DHH students. By incorporating visual aids and modern educational technology, educators can create a more inclusive and effective learning environment, ultimately enhancing the educational outcomes of DHH students.

The last point in the challenges faced by EFL teachers in teaching D/HH students is inappropriate classroom arrangement, as stated by Teacher 2 and Teacher 4;

- (1) 'The classroom is relatively small' (*Teacher 2*)
- (2) 'Teachers are unable to adjust the seating arrangement' (*Teacher 4*)

The physical classroom environment, which encompasses seating arrangements, lighting, and overall organization, can significantly influence students' behavior and their ability to stay focused on academic tasks. A previous study by Guardino & Fullerton (2010) highlighted the importance of optimizing these aspects to create a conducive environment to learning. To further enhance communication skills, it is advisable to set up one wall with mirrors, which can facilitate pronunciation practice for students with hearing impairment (Domagała-Zyśk & Podlewska, 2021). Additionally, providing visual support, as suggested by Dewi, Yawisah, & Siregar (2019), is crucial in aiding the learning process for these students. Finally, arranging chairs in a U-shaped formation not only promotes interaction among students but also allows them to easily read facial expressions and lip movements, further enhancing their communication abilities (Harahap, Santosa, Wahjudi, & Martokusumo, 2020).

Implications of this Research

As previously mentioned, teachers employ the Merdeka curriculum when teaching students who are deaf or hard of hearing (D/HH). However, there is currently a lack of instructional materials designed for students with hearing impairments. The commonly employed teaching method is the grammar translation method. When instructing students in English, lip reading and Indonesian sign language are practiced. Classical seating arrangements are employed for classroom management. There is a lack of facilities, with minimal visual elements on the walls. The learning experience provided to D/HH students focuses mostly on vocabulary and spelling, with less emphasis on developing language skills.

The results of this study imply 1) the actual state of teaching English as a foreign language in the Indonesian setting, 2) this study can serve as a supplementary resource for establishing policy on the instruction of English to students with hearing impairments, 3) this research provides an excellent resource for creating curriculum and instructional materials that are specifically tailored to students with hearing impairments who are learning English, and 4) this study can also serve as a valuable resource for understanding the significance of professional development for English teachers working with deaf and hard of hearing students. This study explores the importance of developing learning materials, enhancing teaching methods, classroom management, assessment, and proficiency in international sign language. Finally, the research findings may inspire scholars to investigate ways of teaching English as a foreign language to students from various backgrounds, including those who are hearing impaired.

CONCLUSION

In conclusion, this study identified several challenges faced by EFL teachers in teaching D/HH students in Indonesia. One of the main issues was the absence of teachers' prior experience in developing curriculum and syllabus. Other issues were related to teachers' and students' lack of sign language understanding. The teachers lacked formal training in teaching deaf students. The majority of teachers majored in English as a Foreign Language and did not receive any pre-service teacher training in sign language. The study also demonstrates a lack of instructional materials designed specifically for deaf students. The resources used were intended for hearing students. Other difficulties faced by the teachers are the students' learning characteristics. The teachers primarily used grammar-translation methods and applied ineffective classroom management. Based on the research findings, it is essential for policymakers to undertake a comprehensive evaluation of the English curriculum, implement targeted professional development programs for teachers, and create a classroom environment that caters to the distinct learning requirements of the students.

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REFERENCES

- Adi, S. S., Unsiah, F., & Fadhilah, D. (2017). Teaching Special Students: English Lessons for Deaf Students in Indonesian Special Junior High Schools. *International Journal of Education and Research*, 5(12), 121–136. https://www.ijern.com/journal/2017/December-2017/10.pdf.
- Affandi, A. (2018). Teaching EFL to Deaf and Hard Hearing (DHH) Students: A Lesson From Two Special Needs Senior High Schools. *Universitas Teknokrat Indonesia*, 45(1).
- Bedir, H. (2019). Pre-service ELT Teachers' Beliefs and Perceptions on 21st Century Learning and Innovation Skills (4Cs). *Journal of Language and Linguistic Studies*, 15(1), 231–246. https://doi.org/10.17263/jlls.547718.
- Bedoin, D. (2011). English Teachers of Deaf and Hard-of-Hearing Students in French Schools: Needs, Barriers and Strategies. *European Journal of Special Needs Education*, *26*(2), 159–175. https://doi.org/10.1080/08856257.2011.563605.
- Bergeron, F., Berland, A., Demers, D., & Gobeil, S. (2020). Contemporary Speech and Oral Language Care for Deaf and Hard-of-Hearing Children Using Hearing Devices. *Journal of Clinical Medicine*, 9(2). https://doi.org/10.3390/jcm9020378.
- Burns, N., & Grove, S. (2009). *The Practice of Nursing Research, Appraisal, Synthesis, and Generation of Evidence* (6th ed.). Saunders Elsevier, St Louis.
- Christina, C. (2019). Teaching English to Students of Dena Upakara Wonososobo. *CLLiENT* (*Culture, Literature, Linguistics, and English Teaching*), 1(01), 65–79. https://doi.org/10.32699/cllient.v1i01.663.

- Creswell, J. W. (2009). Mapping the Field of Mixed Methods Research. *Journal of Mixed Methods Research*, *3*(2), 95–108. https://doi.org/10.1177/1558689808330883.
- Csizer, K., & Kontra, E. H. (2020). Foreign Language Learning Characteristics of Deaf and Severely Hard-of-Hearing Students. *The Modern Language Journal*, 104(1), 233–249. https://doi.org/10.1111/modl.12630.
- Dewi, A. A., Yawisah, U., & Siregar, S. (2019). Teaching English to Children with Hearing Impairment: A Case Study in Special School. *Pedagogy: Journal of English Language Teaching*, 7(1), 10–19. https://e-journal.metrouniv.ac.id/index.php/pedagogy/article/view/1430.
- Domagala-Zysk, E. (2016). *Teaching English as A Second Language to Deaf and Hard-of-Hearing Students*. The Oxford Handbook of Deaf Students in Language.
- Domagała-Zyśk, E., & Podlewska, A. (2021). A Challenge, a Must, an Adventure: English as a Foreign Language for Deaf and Hard of Hearing Students. *International Perspectives on Diversity in ELT*, 265–281. https://doi.org/10.1007/978-3-030-74981-1_15.
- Dotter, F. (2008). English for Deaf Sign Language Users: Still a Challenge. Peter Lang.
- Edwards, L., & Anderson, S. (2014). The Association Between Visual, Nonverbal Cognitive Abilities and Speech, Phonological Processing, Vocabulary and Reading Outcomes in Children with Cochlear Implants. *Ear and Hearing*, *35*(3), 366–374. https://doi.org/10.1097/AUD.00000000000012.
- Fauyan, M. (2019). Developing Interactive Multimedia Through Ispring on Indonesian Language Learning with The Insights of Islamic Values in Madrasah Ibtidaiyah. *Al Ibtida: Jurnal Pendidikan Guru MI*, 6(2). https://doi.org/10.24235/al.ibtida.snj.v6i2.4173.
- Guardino, C. A., & Fullerton, E. (2010). Changing Behaviors by Changing the Classroom Environment. *Teaching Exceptional Children*, 42(6), 8–13. https://doi.org/10.1177/004005991004200601.
- Hamidah, N., & Nurdiawati, D. (2021). Teacher's Strategy in Teaching English for Deaf Students at SLB Manunggal Slawi-Tegal: Array. *Jurnal Dialektika Program Studi Pendidikan Bahasa Inggris*, 9(1), 34–51. https://doi.org/10.58436/jdpbi.v9i1.722.
- Hamilton, H. (2011). Memory Skills of Deaf Learners: Implications and Applications. *American Annals of the Dea, 156*(4), 402–423. https://doi.org/10.1353/aad.2011.0034.
- Harahap, R. M., Santosa, I., Wahjudi, D., & Martokusumo, W. (2020). Study of Interiority Application in Deaf Space Based Lecture Space. *Journal of Accessibility and Design for All*, 10(2), 229–261. https://doi.org/10.17411/jacces.v10i2.245.
- Holloway, I., & Wheeler, S. (2002). *Qualitative Research in Nursing*. Wiley-Blackwell.
- Jamilah, I. (2013). Perbandingan Media Aplikasi Komputer Microsoft Power Point dan Windows Movie Maker dalam Meningkatkan Kemampuan Mengingat Nama-Nama Bulan Pada Anak Tunarungu. Universitas Pendidikan Indonesia.
- Kontra, E. H. (2013). Language Learning Against the Odds: Retrospective Accounts by Four Deaf Adults. Wydawnictwo KUL.
- Kontra, E. H., Csizer, K., & Piniel, K. (2015). The Challenge for Deaf and Hard-of-Hearing Students to Learn Foreign Languages in Special Needs Schools. *European Journal of Special Needs Education*, 30(2), 141–155. https://doi.org/10.1080/08856257.2014.986905.

- Kunjumon, J., & Megalingam, R. K. (2019). Hand Gesture Recognition System for Translating Indian Sign Language Into Text and Speech. *International Conference on Smart Systems and Inventive Technology (ICSSIT)*, 14–18. https://doi.org/10.1109/ICSSIT46314.2019.8987762.
- Kusters, A. (2021). International Sign and American Sign Language as Different Types of Global Deaf Lingua Francas. *Sign Language Studies*, *21*(4), 391–426. https://muse.jhu.edu/article/799806.
- Marcelino, L., Sousa, C., & Costa, C. (2019). Cognitive Foundations of Mathematics Learning in Deaf Students: A Systematic Literature Review. *Edulearn19 Proceedings*, 5914–5923. https://doi.org/10.21125/edulearn.2019.1425.
- Marschark, M., & Spencer, P. E. (2006). Spoken Language Development of Deaf and Hard-of-Hearing Children: Historical and Theoretical Perspectives. *Advances in the Spoken Language Development of Deaf and Hard-of-Hearing Children*, 3–21. https://psycnet.apa.org/record/2005-14003-001.
- Muzaky, Z. F. (2023). English Teaching Method for Students with Special Needs at Extraordinary Senior High School of Mutiara Hati Bumiayu in the Academic Year 2022/2023. *Jurnal Dialektika Program Studi Pendidikan Bahasa Inggris*, 11(1). https://doi.org/10.58436/jdpbi.v11i1.1511.
- Napier, J. (2007). Comparing Language Contact Phenomena Between Auslan-English Interpreters and Deaf Australians: A Preliminary Study. *Multilingualism and Sign Languages: From the Great Plains to Australia*, 39–77. https://www.researchgate.net/publication/289132114_Comparing_language_contact_phenomena_between_Auslan-English_interpreters_and_deaf_Australians_A_preliminary_study.
- Ng'ethe, G. G., Blake, E. H., & Glaser, M. (2015). SignSupport: A Mobile Aid for Deaf People Learning Computer Literacy Skills. *In International Conference on Computer Supported Education*, 501–511. https://pubs.cs.uct.ac.za/id/eprint/1018/1/54423.pdf.
- Rahmah, C. R., & Kholiq, A. (2018). An Analysis of Communication Types of Deaf Students with Environment. *Jo-ELT (Journal of English Language Teaching) Fakultas Pendidikan Bahasa & Seni Prodi Pendidikan Bahasa Inggris IKIP*, *5*(2), 75–85. https://doi.org/10.33394/jo-elt.v5i2.2304.
- Saleem, S., Sajjad, S., & Alwi, S. K. K. (2019). Provision of Classroom Environment for Students with Hearing Impairment: Case Study of a Special School in Karachi City. *Small*, 9(5), 21-25. DOI: 10.7176/PPAR.
- Shepherd, C. M., & Alpert, M. (2015). Using Technology to Provide Differentiated Instruction for Deaf Learners. *Journal of Instructional Pedagogies*. https://files.eric.ed.gov/fulltext/EJ1069390.pdf.
- Subin, N., & Liang-Itsara, A. (2022). Challenges for Methodological Designs and Proposed Alternative Instruction for Teaching English Grammar to Thai Deaf and Hard-of-Hearing Students. *English Language Teaching*, 15(11), 1–70. https://doi.org/10.5539/elt.v15n11p70.
- Sultanbekova, A. (2019). Teaching English as a Foreign Language to Deaf and Hard-of-Hearing Students at One School in Kazakhstan. *Nazarbayev University Repository*. http://nur.nu.edu.kz/handle/123456789/4309.
- Suryanti, Y., Sofyan, D., Rahmah, M., & Dahlia, U. (2023). Teacher's Strategy In Teaching Vocabulary to Deaf or Hard-of-Hearing Students. *JHSS (Journal of Humanities and*

- Social Studies), 7(1), 012–014. https://doi.org/10.33751/jhss.v7i1.6825.
- Syukri, S., & Humaera, I. (2019). Gaining Motivation on English Learning for Special Need Students Using Flashcards, Foldable Books and Posters in EFL Context. *Langkawi: Journal of The Association for Arabic and English*, *5*(2), 92–101. https://doi.org/10.31332/lkw.v5i2.1303.
- Tambunan, R. W. (2022). Deaf Students' Abilities in English Vocabulary at Special School. *Journal of Language, Literature and Teaching, 4*(3), 16–26. https://doi.org/10.35529/jllte.v4i3.16-26.
- Tiku, K., Maloo, J., Ramesh, A., & Indra, R. (2020). Real-Time Conversion of Sign Language to Text and Speech. 2020 Second International Conference on Inventive Research in Computing Applications (ICIRCA). https://ieeexplore.ieee.org/document/9182877/.
- Tomic, D., Posedi, D., & Geld, R. (2018). Foreign Language Teaching and Children with Disabilities Hearing Impairment. *International Conference on Fundamental and Applied Aspects of Speech and Language*, 494–499. https://www.researchgate.net/publication/322420796_Foreign_language_teaching and children with disabilities hearing impairment.
- Utami, I. L. P., & Prestridge, S. (2018). How English Teachers Learn in Indonesia: Tension Between Policy-Driven and Self-Driven Professional Development. *Teflin Journal*, 29(2). https://doi.org/10.15639/teflinjournal.v29i2/245-265.
- Zakia, D. L., Sunardi, S., & Yamtinah, S. (2017). The Study of Visual Media Use on Deaf Children in Science Learning. *European Journal of Special Education Research*, *2*(2). https://doi.org/10.5281/zenodo.253771.