EDUVELOP
JOURNAL OF ENGLISH EDUCATION AND DEVELPMENT
Nationally Accredited Journal Decree No.10/C/C3/DT.05.00/E5/2025 (Sinta 2)

Volume 9, No. 1, March 2026 • **Page: 114 - 130**
DOI: https://doi.org/v9i1.5952
ISSN 2597-713X (print)
ISSN 2597-7148 (online)

OPEN ACCESS: Research Article

Analysis of Technology Support Needs in Foreign Language Learning Models for Learners with Disabilities to Support the Independent Learning Vocational Program

Anda Prasetyo Ery[1]*, Mukarramah Machmud[2], Muhammad Said[3], Muhammad Arfin Muhammad Salim[4].

[1]Language Centre, Hospitality Management Study Programme, Makassar Tourism Polytechnic, Makassar, Indonesia
[2]Travel and Tourism Business Study Programme, Makassar Tourism Polytechnic, Makassar, Indonesia
[3]Student Affairs Administration, Makassar Tourism Polytechnic, Makassar, Indonesia,
[4]Hospitality Management Study Programme, Makassar Tourism Polytechnic, Makassar, Indonesia

*Correspondence e-mail: andaery@poltekparmakassar.ac.id

Received : 2025-11-30	**Accepted :** 2026-01-05
Revision : 2026-02-28	**Published :** 2026-03-31

Abstract
The Independent Learning (Vocational) Program requires independence and practical skills, such as foreign language proficiency. To ensure that students with disabilities, particularly students with Deaf (Total Deafness), can participate in the vocational environment, this study examines the necessary adaptive technologies and strategies. Limited Participatory Observation in the model trial class and Document Analysis (RPS and curriculum) were used in this qualitative case study. The focus of the observation was the use of visual media and technology, as well as identifying gaps in existing technological support. The results show that using a learning model is very effective in low-tech visual adaptation driven by lecturers' personal efforts. This includes the preparation of adaptive lesson plans (RPS), captioning, and consistent visualization. However, the analysis found that the high-tech gap results in a significant need for technological support (A4). There are certain communication barriers, particularly in verifying students' spontaneous cues (C1), because real-time voice-to-text conversion applications are not explicitly supported by the curriculum guidelines. To address miscommunication, the integration of real-time assistive tools is a top technological need. To achieve the goal of vocational program independence, adaptive practices must be reinforced with institutional policy mandates that ensure adaptive technology is available and used, so that inclusion no longer depends on individual faculty autonomy.

Keywords: *Technology Support needs; Vacational program; Learners with disabilities; Visual accessibility; Foreign language learning.*

DOI: https://doi.org/v9i1.5952

1. Introduction

Vocational higher education, particularly in the field of tourism, is very important for producing skilled workers. Tourism polytechnics face challenges in meeting the needs of students with disabilities in relation to improved access to and quality of education (Persons with Disabilities). In such situations, the ability to speak a foreign language is a key skill that determines a graduate's competitiveness. Although the learning model is intended to support inclusion, its success heavily depends on the development of methods that can address certain communication difficulties faced by deaf students. People with disabilities are defined as individuals who should be treated equally to others. The Sustainable Development Goal (SDG) 4, which calls for universal access to high-quality, inclusive education, serves as the foundation for this idea (Adipat, 2022). Meeting the demands of students with disabilities in terms of better access to and quality of education presents difficulties for tourism polytechnics. In these circumstances, a graduate's competitiveness in the international hospitality industry is largely determined by their proficiency in a foreign language, particularly in elective courses like French and Japanese. Even though the learning model aims to promote inclusiveness, strategies that may effectively address the unique communication challenges faced by deaf students are crucial to its success. The Sustainable Development Goal (SDG) 4 on equitable education (Adipat, 2022) supports the idea that people with disabilities should be treated similarly to others, just like their peers (Robinson et al., 2021). "People with disabilities are defined as individuals who should be treated equally to others. Current literature emphasizes that providing an inclusive environment in higher education is essential for fostering independent living and professional dignity (Lainy & Pierre, 2023). Furthermore, studies specifically addressing vocational training highlight that specialized language teaching methods are vital for students with disabilities particularly those with hearing impairments to enhance their competitiveness and prevent marginalization in the tourism industry (Stepanova & Lashenkov, 2022)."However, they sometimes still face obstacles in gaining equal access to education at school and university, finding employment, and accessing medical services (Anies Sya'roni Muhammad et al., 2022). The fulfilment of the right to education is not only a matter of regulation but is also related to the culture of a society that feels ashamed of having children or family members with disabilities (Delgado et al., 2020). This indicates that modules and models alone are not enough; a systematic impact is needed (Haliza et al., 2020). Previous studies have addressed the obstacles and challenges faced by deaf learners in foreign language learning, such as the study by (Csizér & Kontra, 2020) which highlighted the challenges in foreign language learning for deaf students in Europe. However, there has been no study on this topic in the Indonesian context. Another study discussed the use of software in foreign language learning (Birinci & Sariçoban, 2021).

DOI: https://doi.org/v9i1.5952

2. Methods

a. Research Design:

This study adopted a qualitative case study design to provide an in-depth exploration of the educational challenges faced by deaf students in a vocational setting. This approach is particularly effective for understanding complex social phenomena within their real-life context, specifically the interaction between instructional methods and the unique communication needs of students with disabilities (Ningsih et al., 2025)." This study is designed as an exploratory case study and uses a qualitative-descriptive approach. This design was chosen to conduct a needs analysis. It will explore issues related to communication gaps and the need for adaptive technology support in vocational education settings. To identify and link the specific needs of students with disabilities (deaf) and the difficulties faced by teachers in implementation, qualitative data is presented in the form of narratives and in-depth descriptions, based on the acknowledgment of language teachers who face challenges explaining topics without a Sign Language Interpreter (SLI). This indicates that just modules and models are not enough, systematic support is needed (Sugiyono, 2020).

b. Participants (Sampling Strategy):

This research was conducted at one of the Tourism Polytechnics in Indonesia that has an inclusive education program. Certain criteria were used to select research participants through purposive sampling. (1) Students with disabilities (deaf or deaf) who are the target of the foreign language learning model; (2) Foreign language lecturers (Japanese and French) who are directly involved in the implementation of the model; and (3) Institutional Stakeholders, including the Head of Study Program and the Curriculum Department, who oversee institutional policies and support (Ahmad & Wilkins, 2024).

c. Data analysis:

Thematic analysis methods are used to analyze the collected qualitative data. (1) Transcription of interview data; (2) Coding to identify recurring patterns and themes, especially those related to learning difficulties, communication needs, and technology support needs; (3) Grouping themes (for example, into "Lecturer-Student Communication Gaps," "Visual/Technology Media Needs," and "Institutional Support"); and (4) Interpretation to define the concrete implications of adaptive technology needs (Tian et al., 2021).

3. Results and Discussions

a. Communication Gaps and Barriers to Understanding Foreign languages

Based on the analysis that has been conducted, the following interviews provide deeper insight. First, interviews were conducted with five students with deaf. Five students were chosen to represent the total number of deaf students at Makassar Tourism Polytechnic and . The selected deaf students meet the criteria of being active students, having hearing impairments, studying a foreign language, being willing to communicate

DOI: https://doi.org/v9i1.5952

openly, and being at different semester levels. From the interview results, several main issues emerged, one of which is related to communication gaps and barriers in understanding foreign languages. The points found regarding communication gaps and barriers in understanding foreign languages are presented in the table below.

Table 1. Communication Gaps and Barriers to Understanding Foreign Languages

Data Presentation Focus	Key Quotes Used	Purpose of the analysis
Limited Understanding of the Material	Student Deaf 1: "I don't really understand the content of the Japanese lesson; for me, it's difficult."	Pointing out that the difficulty isn't just with foreign languages, but also with how the material is delivered.
LecturersTeaching Methods Issue	Student Deaf 5: "I can follow the class, but sometimes I don't understand because the professor talks too fast without writing on the board." Student Deaf 4: "If the professor knows even a little bit of sign language, I can understand."	Pointing out that purely oral methods (without visuals or Sign Language) aren't effective.

Source: researcher-processed data results, 2025.

b. The Need for Adaptive Media and Assistive Technology

The second issue is the existence of the need for adaptive media and assistive technology. Findings from the Need for Adaptive Media and Assistive Technology can be seen in the table below.

Tabel 2. The Need for Adaptive Media and Assistive Technology

Data Presentation Focus	Key Quotes Used	Purpose of the analysis
Visualization Needs	Deaf Student 2: *"I'm having trouble learning Japanese; maybe I could understand it if it was in pictures or videos."*	Building a strong argument about the need for visuals as a replacement for auditory information.
Teks Accessibility Needs	Deaf student 3: *'It would be better if there were pictures and pronunciation in Indonesian along with the meaning added.'*	Shows the need for clear text, translation, and captioning (made easier with technology).

Source: researcher-processed data results, 2025.

c. Institutional Challenges and Curriculum Support

The third finding is regarding of Institutional Challenges and Curriculum Support.

DOI: https://doi.org/v9i1.5952

Table 3. Institutional Challenges and Curriculum Support

Data Presentation Focus	Key Quotes Used	Purpose of the analysis
Limited Support	Japanese Language Lecturer (NHI Bandung Tourism Polytechnic): *"When teaching in class for 2 weeks, a deaf student was accompanied by a JBI interpreter, but the following week I found it hard to explain."*	Emphasizing that human support (JBI) is not always sustainable, so technological solutions (which are always available) are needed.
Phonetic Inaccessibility	French Language Lecturer (Makassar Tourism Polytechnic): *"Struggled to convey French pronunciation rules and "silent sounds" which are crucial for tourism-standard speaking skills."*	pointing out that technological techniques (such visual phonetics/AI) are necessary to fill in the gaps in subtle pronunciation rules because human translators do not have the necessary phonetic-visual training.
Policy Gap	Curriculum Section (Makassar Tourism Polytechnic):: *"There is no explicit information about inclusive learning strategies in the curriculum." Head of Study Program: "We are open to suggestions for adjustments, but we do not yet have specific guidelines for students with disabilities."*	It shows that your analysis of technology needs is highly relevant for filling the gap in institutional guidance.

Source: researcher-processed data results, 2025.

In addition to conducting interviews, the researcher conducted classroom observations on August 9, 2025. The analysis of the observation findings is presented in tables 4, 5, 6, 7, and 8.

Table 4. Use of Adaptive Technology and Social Media (A)

Indicator (A)	Key Findings	Quality (1-5)	Interpretation
A1: Projector/Slide Clarity	Font 20, color contrast tends to be red, text is not too dense.	**5 (high)**	The slides/projector were presented well in terms of overall readability. Large fonts and low density greatly support visual accessibility.
A2: Visualization of Abstract Concepts	The use of images.	**5 (high)**	The lecturer actively uses visual media to

DOI: https://doi.org/v9i1.5952

			translate abstract language concepts, which is crucial for students with deaf.
A3: Teks/Subtitles (Captioning)	There is text, subtitles, and image captions.	**5 (high)**	The most important aspect is: the need for auditory substitutes is met through the presence of text/subtitles/captions, which ensures that Deaf students can access the same content.
A4: Text/Visual Translation Application	**None.**	**1 (low)**	This is the main gap in the use of adaptive technology in real-time. If there are sign language barriers or verbal explanations, there is no technology application used as direct assistance.
A5: Written Language of Lecturers/Students	Writing on the board.	**5 (high)**	Writing on the board/manual media is also presented clearly, serving as a good visual alternative..
A6: Additional Notes	Picture/photo cards and images in sli	**5 (high)**	Confirm that the teaching strategy is highly focused on visuals and physical teaching aids, which is an effective method for deaf students.

Source: researcher-processed data results, 2025.

Tabel 5. Communication & Interaction Patterns (B)

Indicator (B)	Key Findings	Interpretation in the Context of Deaf
B1: The Use of Sign Language (SL)	The lecturer has limited knowledge about SL. The	This indicates the presence of an Adaptive Lecturer

DOI: https://doi.org/v9i1.5952

	lecturer uses their own approach (written and SL) for deaf.	Strategy, which combines written communication with limited SL. The lack of formal SL proficiency among lecturers necessitates strong written visual support (as seen in Section A).
B2: Facilitate Interaction	Carried out by lecturers communicating in a two-way manner..	Two-way interaction was successfully facilitated. This means that despite the limitations of BI, the lecturer managed to create a communication channel that allows information exchange with deaf students.
B3: Deaf Student Response	Active students respond/ask questions using SL and lip movements.	High Student Engagement. Students are not passive and utilize two main modalities (visual-cues and visual-lip reading) to participate.
B4: Lecturer Visual Engagement	Carried out by a foreign language lecturer (maintaining eye contact and a clear facial position).	Maximum Physical Visual Support. Instructors understand the importance of visual clarity, which is very helpful for students who rely on lip reading and eye contact.
B5: The Use of Interactive Stationery	Done.	The use of interactive writing tools supports Inclusive Group Discussions, allowing students with hearing impairments to participate equally with their hearing peers.
B6: Key Interaction Quotes	The use of sign language and sign alphabets, writing in large font on A4 paper.	This reinforces B1—the lecturer uses a combined system (Simple Signs + Sign Alphabet) to overcome BI limitations. Using A4 paper

DOI: https://doi.org/v9i1.5952

			with large font is a very adaptive visual support.

Source: researcher-processed data results, 2025.

From the data in the table above, parts A and B reinforce each other:

1) The lecturer's limitation in oral communication to formal sign language, the lecturer has limitations in formal Sign Language (B1).
2) Compensation through adaptive visual strategies, this limitation is exceptionally compensated by the lecturer through three main strategies:
   a. Material visualization (Slides, Subtitles, Very clear images - A1, A2, A3).
   b. Written/typed communication (Whiteboard, interactive writing tools, A4 paper with large font - A5, B5, B6).
   c. Physical clarity of the lecturer (Good eye contact and face position for lip reading - B4).
3) As a result of positive interactions, with this adaptive strategy, two-way interaction (B2) and active participation of deaf students (B3) were successfully realized.

Table 6. Specific Barriers to Visual/Sign Communication

Indicator (C)	Key Finding	Obstacle Status	Interpretation
C1	Sometimes there is a misunderstanding about the meaning of sign language used by deaf students.	There are obstacles	This is a major weak point. Lecturers with limited SL (B1) try to interpret students' signals, which can potentially lead to miscommunication, even though two-way communication (B2) occurs.
C2	There are no visual obstacles.	Minimal obstacles	The lighting and layout of the classroom greatly support visual access to the lecturer/screen. (Reinforces A1 and B4).
C3	Text is not dense.	Minimal obstacles	The lecturer successfully kept the slides uncluttered

DOI: https://doi.org/v9i1.5952

			and the visuals clear (Reinforces A1).
C4	Face to face.	Minimal obstacles	Lecturers consistently support students who rely on lip reading, demonstrating a high level of communication awareness (reinforcing B4)
C5	Sometimes having difficulty understanding abstract concepts (idioms/metaphors) and therefore needing visualization.	There are obstacles	These obstacles are natural when learning a foreign language. Even though visualization has been used (A2), lecturers need extra readiness to suddenly visualize complex contextual meanings.
C6	The lecturer tries to learn sign language related to the topic that will be taught.	High adaptive reaction	The lecturer's reaction was very proactive. Instead of relying on a translator, the lecturer tried to reduce the communication gap by learning relevant thematic SL vocabulary, which directly addressed C1.

Source: researcher-processed data results, 2025.

The relationship between tables A and C above can be generally concluded as follows:

a. Excellent Visual Accessibility (A & C2, C3, C4):The lecturer successfully creates a highly visual-centric physical environment and teaching materials (large fonts,

DOI: https://doi.org/v9i1.5952

uncluttered slides, subtitles, clear eye contact). Environmental and visual material barriers are almost nonexistent.

b. Highly Adaptive Lecturer Communication Strategy (B & C6):Although there are limitations in formal Indonesian language (B1), the lecturer compensates for them with a strong combination: Writing/Sign Alphabet (B6), Consistent Physical Visuals (B4), and most importantly, Commitment to thematic Indonesian learning (C6).
c. Key Gap: Interpretation of Cues & Abstract Concepts (C1 & C5):
    1) The main weakness is the misinterpretation of student cues (C1) and the difficulty in visualizing the meaning of complex language (C5). This is a direct consequence of the formal limitations of the lecturer's Indonesian proficiency.
    2) Technology Gap (A4): The absence of voice-to-text conversion applications becomes increasingly apparent here. If the lecturer is unsure about student cues (C1), a speech-to-text application can serve as a quick (real-time) verification tool to prevent miscommunication.

Table 7. Comprehensive Analysis 1: Curriculum vs. Field Implementation

Document Analysis Findings	Related Observational Findings	Interpretation and Conclusion
Not explicitly written in the curriculum.	Visual usage is very high (A1, A2, A3, A5, A6) and non-verbal communication strategies are strong (B4, B6).	Lecturer initiative is the key to success. Highly effective adaptive learning strategies in the classroom (using picture cards, large fonts, captioning) are not a policy requirement, but rather a professional and personal commitment from the lecturer. This is a very strong finding: Accessibility is driven by individuals, not by the system.
Lecturers incorporate materials, teaching aids, and adaptive teaching methods into the syllabus that is prepared individually.	Lecturer's Reaction: Trying to study thematic Indonesian (C6).	Lecturers demonstrate full autonomy in instructional design for inclusion. They proactively adjust the Semester Learning Plan (RPS/Syllabus) to fill gaps in the formal curriculum guidelines. This explains

DOI: https://doi.org/v9i1.5952

	why field implementation is very good (Quality 5) even though it is not explicitly required.

Source: researcher-processed data results, 2025.

Table 8. Analysis of Point 2: Use of Adaptive Technology (Real-Time)

Document Analysis Findings	Related Observational Findings	Interpretation and Conclusion
Not explicitly written in the curriculum (text/visual translation application).	Observations show no use of Text/Visual Translation Applications (A4 = Quality 1).	The lack of guidance is equivalent to the lack of implementation. The curriculum does not mandate this real-time technology, so its implementation becomes optional or does not happen at all, even though this application could be a solution to address signal misperceptions (C1).
Lecturers are allowed to use it if they have the application, but it has not been seen being used.	Main obstacles: misperception of signals (C1) and difficulty with abstract concepts (C5).	Lecturers tend to use strategies they are proficient in (Visual and Manual Writing) rather than technology they do not possess or that has not been integrated into the system. This indicates a gap in personal commitment among lecturers.

Source: researcher-processed data results, 2025.

This study found a very clear picture of the implementation of inclusivity in classes for deaf students, namely:

a. Adaptive Motivation: Effective inclusive learning is dominated by the initiative and personal commitment of lecturers reflected in their personal syllabi (RPS), rather than from strict explicit curriculum guidelines (Azimi et al., 2021).
b. Low-Tech Strengths: Classes are highly successful in low-tech and medium-tech visual adaptations (slides, writing, picture cards, face-to-face communication).
c. High-Tech Gaps: There is a gap in high-level adaptive technology (Text/Visual Translation Applications) due to the absence of explicit guidance from the curriculum.

DOI: https://doi.org/v9i1.5952

This gap correlates with the emergence of real-time communication barriers, such as misinterpretation of student cues.

3.1. Discussion

a. Adaptive Visual Learning as Compensation for Auditory Limitations

Talking about how well visual adaptations are made by lecturers and comparing them to how important visualization is in teaching the deaf. (Showing results A1, A2, A3, A5, A6, B4, C2, C3, C4). Observation findings indicate that language learning adaptations for Deaf students in the case study class focus on optimizing visual channels, which serve as a direct compensation for auditory limitations. In ensuring content accessibility, this strategy has proven effective, with almost all indicators focusing on visual media receiving high quality ratings (A1, A2, A3, A5, A6). As explained by (Ahmad & Khasawneh, 2023), access to information for deaf individuals heavily relies on the clarity and speed of visual transmission, both through materials and teacher actions (Aprizia Perenial Asla Wahyudi et al., 2024).

Development 1: Analysis of Teaching Material Quality (A1, A3, A6)

The design of teaching materials that is highly visual-centric demonstrates successful implementation. A concrete example of a general design that prioritizes readability is the use of large fonts, uncluttered text layouts, and captioning in video/audio materials (A1, A3). This method, along with the use of picture cards and visualization of abstract concepts (A2, A6), shows that lecturers have consciously shifted from sound-based teaching to meaning-based visual teaching. This helps people learn foreign languages, which often include abstract concepts, such as grammar or idioms, that are difficult to understand without strong visual support (Mufit et al., 2020).

Development 2: Analysis of Lecturer Communication Behavior (B4, C4)

Focus on how lecturer behavior supports visual access: Adaptation of materials and lecturer communication are both very important. Observations indicate that lecturers consistently maintain eye contact and clear face-to-face positioning during communication (B4, C4). This behavior is very helpful for students who rely on lipreading as an additional means to complement cues or text. Furthermore, the presence of significant visual barriers (C2, C3) indicates that the classroom environment is well managed, ensuring smooth visual communication and minimizing distractions that could hinder understanding (Oswaldo & López, n.d.).

b. Teacher Autonomy in Promoting Inclusion (Teacher Agency)

Evaluating the most important outcomes: Adaptation is driven by lecturers' personal initiatives, not by the prescribed curriculum. (Describes the results of Point 1 and C6 from the Document Analysis).

Development 1: RPS/Syllabus as an official program

According to document analysis, there is a significant difference between effective adaptive practices in the classroom and the formal curriculum guidelines of the

DOI: https://doi.org/v9i1.5952

institution. Dominant and successful visual and non-verbal learning strategies (Sub-Chapter 1) are not explicitly established as a requirement in the curriculum. Instead, they result from the initiative and full autonomy of the lecturers, specifically mentioned in the Semester Learning Plan (RPS) that is specially designed. With this phenomenon, lecturers become the main actors of inclusion, where the success of classroom accessibility depends on individual commitment rather than a system mandate (Ilmiani et al., 2020).

Development 2: Commitment and Limitations of Lecturer Skills (C6 and B1)

Lecturer initiative must be connected with their efforts to improve competence while maintaining limitations: Lecturers' commitment to inclusion is reinforced by their efforts to learn Sign Language (SL) related to the topics they teach (C6). This action is a proactive response to communication barriers, especially those related to lecturers' limited knowledge of formal SL (SL). This effort is highly commendable because it demonstrates the willingness of lecturers to change their abilities, not just their teaching methods. However, reliance on thematically self-taught SL also causes issues of misperception (C1), as the SL used may be less accurate or comprehensive than formal SL or SL facilitated by trained interpreters (Ngobeni et al., 2020).

c. The Gap in Adaptive Technology and Its Impact on Real-Time Communication

Lecturer initiative must be connected with their efforts to improve competence while maintaining limitations: Lecturers' commitment to inclusion is reinforced by their efforts to learn Sign Language (SL) related to the topics they teach (C6). This action is a proactive response to communication barriers, especially those related to lecturers' limited knowledge of formal SL (B1). This effort is highly commendable because it demonstrates the willingness of lecturers to change their abilities, not just their teaching methods. However, reliance on thematically self-taught SL also causes issues of misperception (C1), as the SL used may be less accurate or comprehensive than formal SL or SL facilitated by trained interpreters (Yaseen et al., 2025).

Development 1: Impact of the Absence of Applications on Real-Time Barriers (A4 vs. C1)

The development caused by the impact of the absence of applications on real-time obstacles is: focusing on the correlation between the lack of applications and the occurrence of miscommunication.

Development on spontaneous miscommunication:

Barriers due to students' sign language misperceptions (C1) are directly correlated with the lack of speech-to-text or visual translation applications (A4). Lecturers have to rely on limited sign language skills (B1) and lip-reading students in spontaneous communication situations, such as Q&A sessions or discussions. Without real-time technology that can convert students' signs into text for quick verification, lecturers may misinterpret students' intentions. An application like this would function as a back-

DOI: https://doi.org/v9i1.5952

channel or verification tool, allowing lecturers and students to instantly verify understanding, reducing the likelihood of misinterpreting signals (Babayemi et al., 2021).

Development 2: Challenges of Abstract Concepts (C5) and Technological Solutions

Often, using a foreign language involves concepts that are difficult to visualize and require advanced technology or deep gestures.

Development of Understanding Abstract Concepts:

Understanding abstract concepts such as idioms or metaphors in a foreign language also poses challenges (C5). Although static visualization (A2) can help, in-depth contextual explanations are often necessary to grasp deeper language meanings. Adaptive technology can offer dynamic solutions, such as using captions in video clips or software for instant definition visualization. This technological gap indicates that while low-tech strategies succeed in conveying basic material, high-tech integration is required to aid a deeper and more nuanced understanding of a foreign language (Sadig, 2024).

4. Implications and Recommendations

4.1. Theoretical and Practical Implications

According to this study, an effective foreign language learning model for deaf students requires an overall visually optimized communication approach. Several adjustments were identified, such as the use of subtitles and consistent visualizations, indicating that a low-tech approach can achieve a very high level of material accessibility. However, practically, this study reveals a key issue. The success of inclusion is highly unstable because it is driven by the autonomy and personal commitment of instructors rather than systemic guidanc (Emans et al., 2024). The gap in advanced technology increases reliance on this individual agency, leaving gaps in real-time interaction, as evidenced by signal misperceptions (C1).

4.2. Policy and Practical Recommendations

Based on these findings, this recommendation is aimed at ensuring the sustainability and quality of inclusion:

4.2.1. Institutional Policy Recommendations

a. Adaptive RPS Standardization: Proactive lecturers must internalize the RPS model, whichincludes adaptive methods and detailed teaching aids. This should become the standard for all foreign language courses at educational institutions. This will ensure that the quality of adaptive learning remains consistent, regardless of teacher turnover.
b. Mandating Adaptive Technology: The curriculum should be updated to include real-time communication tools such as Speech-to-Text applications or visual translation.

DOI: https://doi.org/v9i1.5952

This is intended to bridge technological differences (A4) and prevent spontaneous miscommunication (C1).

4.2.2. Practical Recommendations for Lecturers

a. Improvement of Sign Language Skills: Although lecturers have exerted great effort, more comprehensive formal SL training, particularly related to abstract vocabulary and grammatical structures, should be provided. This is due to the lecturers' ability to assist in the understanding of in-depth concepts (C5).
b. Technology Integration Training: Lecturers should be given technical training on how to utilize and integrate advanced applications into discussions and quick instructions. These applications should serve as tools to ensure accurate communication.

5. Conclusion

In summary, this research shows that using the deaf learning model for students who are deaf mostly relies on changes to visual learning. Tools like captions, helpful pictures, and easy-to-read slides work well in helping those with hearing challenges. Still, how well these inclusive methods work depends more on lecturer initiative than on formal institutional regulations Instructors who actively use different teaching methods and work on their sign language skills usually achieve better results in including students, showing that personal effort is very important in today's education.

Even though there have been successes on a smaller scale, there is still a big difference in how advanced adaptive technology is being put into practice. The missing tools for turning speech into text or providing live visual translations can cause problems in communication, which may result in lecturers misunderstanding students' communication signals. This issue mostly comes from not having clear directions in the formal teaching programs. Because of this, while it is important for teachers to take action, it is crucial to have support from schools and a well-organized way to include technology to create a more complete and lasting environment for learning that includes everyone.

Conflicts of Interest

The authors declare no conflict of interest.

References

Ahmad, M., & Khasawneh, S. (2023). *The use of video as media in distance learning for deaf students*. *15*(2).

Ahmad, M., & Wilkins, S. (2024). Purposive sampling in qualitative research: a framework for the entire journey. *Quality and Quantity*, 1–19. https://doi.org/10.1007/s11135-024-02022-5

Anies Sya'roni Muhammad, Ghozy Ahmad, & Syarifuddin Muhammad. (2022).

Pengembangan Aplikasi E-Syarat Menggunakan Design Thinking Untuk Pembelajaran Bahasa Inggris Siswa Tunarungu. *GRAB KIDS : Journal of Special Education Need*, *2*(1), 043–053.

Aprizia Perenial Asla Wahyudi, Farah Aziizah, Reighina Faridah Solihah, Tiara Dwi Putri NSP, & Siti Hamidah. (2024). Upaya Meningkatkan Kosakata Pada Anak Tunarungu. *Fonologi : Jurnal Ilmuan Bahasa Dan Sastra Inggris*, *2*(2), 24–33. https://doi.org/10.61132/fonologi.v2i2.592

Azimi, M., Rachman, A., & Mirnawati, M. (2021). Problematik Pembelajaran Mahasiswa Berkebutuhan Khusus Pada Perguruan Tinggi Inklusif. *Vidya Karya*, *35*(2), 55. https://doi.org/10.20527/jvk.v35i2.10321

Babayemi, T. D., Raji, N. O., Egwuatu, O. V., & Olumide, M. (2021). *Integrating Artificial Intelligence with Assistive Technology to Expand Educational Access through Speech to Text , Eye Tracking and Augmented Reality*. *7*(4), 652–680.

Birinci, F. G., & Sariçoban, A. (2021). The effectiveness of visual materials in teaching vocabulary to deaf students of EFL. *Journal of Language and Linguistic Studies*, *17*(1), 628–645. https://doi.org/10.52462/jlls.43

Csizér, K., & Kontra, E. H. (2020). Foreign Language Learning Characteristics of Deaf and Severely Hard-of-Hearing Students. *Modern Language Journal*, *104*(1), 233–249. https://doi.org/10.1111/modl.12630

Delgado, N. J., Greene-Woods, A., & Lamar, E. (. (2020). Deaf Cultural Capital and its Conflicts with Hearing Culture: Navigational Successes and Failures. *Abbas Ali Behmanesh*, *54*(1), 15–30. https://repository.wcsu.edu/jadara/vol54/iss1/2

Emans, A., Oolbekkink-marchand, H., Bakker, C., & Bruijn, E. De. (2024). *Teacher agency in the dynamics of educational practices : a theory synthesis*.

Haliza, N., Kuntarto, E., & Kusmana, A. (2020). Vocabulary Acquisition by Deaf Children Indonesian Word Classes in SDLB Karya Mulia II Surabaya: Psycholinguistics Studies. *Jermal*, *1*(2), 89–97.

Ilmiani, A. M., Hamidah, H., Wahdah, N., & Mubarak, M. R. (2020). The Implementation of Semester Learning Plan (RPS) on Maharah Istima' Course by Using Cartoon Story Maker. *LISANIA: Journal of Arabic Education and Literature*, *4*(1), 1–22. https://doi.org/10.18326/lisania.v4i1.1-22

Mufit, F., Asrizal, Hanum, S. A., & Fadhilah, A. (2020). Preliminary research in the development of physics teaching materials that integrate new literacy and disaster literacy. *Journal of Physics: Conference Series*, *1481*(1). https://doi.org/10.1088/1742-6596/1481/1/012041

Ngobeni, W. P., Maimane, J. R., & Rankhumise, M. P. (2020). The effect of limited sign language as barrier to teaching and learning among deaf learners in South Africa. *South African Journal of Education*, *40*(2), 1–7. https://doi.org/10.15700/saje.v40n2a1735

DOI: https://doi.org/v9i1.5952

Oswaldo, W., & López, F. (n.d.). *Analysis of the Factorial Structure of an Attitude*. 45–77.

Sadig, Z. (2024). Euro-Global Journal of Linguistics and Language Education. *Euroglobal Journal of Linguistics and Language Education*, *2*(3), 3–10.

Sugiyono. (2020). *Metodologi Penelitian Kuantitatif, Kualitatif dan R & D*.

Tian, M., Cànoves, G., Chu, Y., Font-Garolera, J., & Prat Forga, J. M. (2021). Influence of cultural background on visitor segments' tourist destination image: A case study of barcelona and chinese tourists. *Land*, *10*(6). https://doi.org/10.3390/land10060626

Yaseen, H., Mohammad, A. S., Ashal, N., Abusaimeh, H., Ali, A., & Sharabati, A. A. A. (2025). The Impact of Adaptive Learning Technologies, Personalized Feedback, and Interactive AI Tools on Student Engagement: The Moderating Role of Digital Literacy. *Sustainability (Switzerland)*, *17*(3), 1–27. https://doi.org/10.3390/su17031133