

ANALYZING HEARING-IMPAIRED STUDENTS' EXPERIENCES WITH INTERACTIVE AUDIO-VISUAL VIDEOS IN ENHANCING LISTENING COMPREHENSION

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ABSTRACT

Hearing-impaired students often encounter challenges in listening comprehension due to limited access to auditory information. Interactive audio-visual learning videos have the potential to support language learning by integrating visual and textual representations that facilitate comprehension. This study aimed to explore the experiences of hearing-impaired students in using interactive audio-visual learning videos to enhance listening comprehension. This study employed a qualitative case study approach involving two eighth-grade hearing-impaired students from a public special school in Medan, Indonesia. The participants were selected through purposive sampling. Data were collected through classroom observations, structured interviews, and documentation, and were analyzed using thematic analysis. The findings revealed three major themes: increased engagement and motivation, the important role of visual supports in facilitating comprehension, and challenges related to accessibility and information presentation. The participants reported that pictures, written text, and contextual visual information helped them understand English learning materials more effectively, while fast-paced content and hearing limitations remained challenges during the learning process. The findings provide insights into how interactive audio-visual learning videos support English listening instruction for hearing-impaired students and may inform teachers in designing more accessible and inclusive learning environments.

Keywords: hearing-impaired students, interactive audio-visual videos, listening comprehension, qualitative case study, inclusive education

ABSTRAK

Siswa tunarungu sering menghadapi kesulitan dalam memahami keterampilan menyimak (listening) karena keterbatasan akses terhadap informasi auditori. Video pembelajaran audio-visual interaktif berpotensi mendukung pembelajaran bahasa dengan mengintegrasikan representasi visual dan tekstual yang memudahkan pemahaman. Penelitian ini bertujuan untuk mengeksplorasi pengalaman siswa tunarungu dalam menggunakan video pembelajaran audio-visual interaktif untuk meningkatkan kemampuan menyimak bahasa Inggris. Penelitian ini menggunakan pendekatan studi kasus kualitatif yang melibatkan dua siswa tunarungu kelas VIII di salah satu Sekolah Luar Biasa Negeri di Medan, Indonesia. Partisipan dipilih menggunakan teknik purposive sampling. Data dikumpulkan melalui observasi

kelas, wawancara terstruktur, dan dokumentasi, kemudian dianalisis menggunakan analisis tematik. Hasil penelitian mengungkapkan tiga tema utama, yaitu meningkatnya keterlibatan dan motivasi belajar, pentingnya dukungan visual dalam memfasilitasi pemahaman, serta tantangan terkait aksesibilitas dan penyajian informasi. Partisipan melaporkan bahwa gambar, teks tertulis, dan informasi visual kontekstual membantu mereka memahami materi pembelajaran bahasa Inggris dengan lebih efektif, sedangkan penyajian materi yang terlalu cepat dan keterbatasan pendengaran masih menjadi tantangan dalam proses pembelajaran. Temuan penelitian ini memberikan wawasan mengenai bagaimana video pembelajaran audio-visual interaktif dapat mendukung pembelajaran menyimak bahasa Inggris bagi siswa tunarungu serta menjadi masukan bagi guru dalam merancang lingkungan pembelajaran yang lebih aksesibel dan inklusif.

Kata Kunci: siswa tunarungu, video audio-visual interaktif, kemampuan menyimak, studi kasus kualitatif, pendidikan inklusif

A. Introduction

Teaching English to hearing-impaired students remains a significant challenge because of their limited access to auditory information, which affects language acquisition and listening comprehension. Previous studies have reported that hearing-impaired students often experience difficulties in developing foundational language skills, understanding phonological aspects, and accessing adaptive learning resources. Teachers therefore tend to employ visual and multimodal instructional strategies, such as pictures, educational games, sign language, and written text, to facilitate language learning (Suryanto et al., 2025). These strategies have been shown to increase students'

engagement and comprehension; however, their implementation still requires stronger institutional support and well-designed instructional media.

Listening comprehension is a fundamental component of language learning because it provides learners with linguistic input necessary for developing vocabulary, grammatical knowledge, and communicative competence (Vandergrift & Goh, 2017). Unlike written language, spoken language requires learners to process linguistic information in real time by combining phonological, lexical, and contextual information simultaneously (Field, 2019). For hearing-impaired students, these challenges become more complex because auditory input is limited. Consequently, learning environments

need to provide alternative forms of representation that support language comprehension. Universal Design for Learning emphasizes that learners should be provided with multiple means of representation to ensure equitable learning opportunities (CAST, 2018; Rose & Dalton, 2019). Likewise, multimodal learning theory suggests that learners with sensory limitations benefit from visual information, written text, graphics, and contextual cues that compensate for restricted auditory access (Knoors & Marschark, 2014; Estabrooks & McDavid, 2019).

Recent developments in multimedia learning have demonstrated that audio-visual learning media can effectively facilitate listening comprehension by integrating visual and verbal information. According to Mayer (2014, 2020), meaningful learning occurs when learners process information through coordinated visual and verbal channels. Similarly, Ginns (2014) explains that multimedia integration enhances learning comprehension by reducing cognitive overload when appropriately designed. Interactive audio-visual learning videos further support

learning by allowing students to replay learning materials, access captions, observe contextual visual cues, and complete guided learning activities, thereby promoting active engagement and self-regulated learning (Hung & Der-Thanq, 2015; Hsu et al., 2014; Sani & Al Motairi, 2020). These features are particularly beneficial for hearing-impaired learners because visual information functions as a compensatory mechanism that facilitates language comprehension despite limited auditory perception (Alves et al., 2017; Allen & Anderson, 2018; Luckner & Handley, 2018).

Previous studies have extensively investigated listening instruction for hearing-impaired students, particularly focusing on instructional strategies, multimodal learning materials, and the effectiveness of visual supports. The findings generally indicate that visual media improve learners' comprehension, engagement, and language processing. However, most existing studies primarily evaluate instructional methods and learning outcomes, while relatively little attention has been given to hearing-impaired students' own experiences in using interactive audio-visual learning

videos. Consequently, limited evidence is available regarding how students perceive, interpret, and utilize these learning media to support listening comprehension.

Based on this research gap, the present study aims to explore the experiences of hearing-impaired students in using interactive audio-visual learning videos to enhance listening comprehension. The findings are expected to contribute to the development of more accessible and inclusive English language instruction by providing practical insights for teachers in designing effective multimedia-based learning environments for hearing-impaired students.

B. Research Method

This study employed a qualitative case study approach to investigate the experiences of hearing-impaired students in using interactive audio-visual learning videos. According to Sugiyono (2022), a case study is a qualitative research approach used to explore and understand a particular case in depth within its real-life context through comprehensive data collection from multiple sources. This approach was

considered appropriate because the present study focused on a specific case involving two hearing-impaired students and aimed to obtain an in-depth understanding of their experiences, engagement, comprehension, and challenges when using interactive audio-visual learning videos in English learning.

The research was conducted at a public special school in Medan, Indonesia. The participants consisted of two eighth-grade hearing-impaired students, one male and one female, who were selected through purposive sampling based on their prior experience using interactive audio-visual learning videos in English classes. To maintain confidentiality, the participants were assigned pseudonyms, namely Student 1 (S1) and Student 2 (S2). The study specifically explored the students' experiences in using interactive audio-visual learning videos, focusing on their engagement during learning activities, their comprehension of the learning materials, and the challenges they encountered throughout the learning process. The participants' characteristics are presented in Table 1.

Table 1. Participants' Characteristics

Participant	Pseudonym	Gender	Grade	Hearing Condition	Selection Criteria	Learning Media
Participant 1	S1	Female	Grade VII	Hearing-impaired	Had prior experience using interactive audio-visual learning videos in English.	English learning.
Participant 2	S2	Male	Grade VII	Hearing-impaired	Had prior experience using interactive audio-visual learning.	

Data were collected through classroom observations, structured interviews, and documentation. Two classroom observations were conducted while the participants learned English using interactive audio-visual videos. The observation sheet was adapted from the classroom observation framework proposed by Cohen, Manion, and Morrison (2018) and the student engagement framework developed by Fredricks, Blumenfeld, and Paris (2004). The observation indicators were modified to suit the characteristics of hearing-impaired learners and the context of interactive audio-visual learning while maintaining their theoretical validity. The observations focused on students' attention, engagement, participation, and responses during the learning activities, and the findings were recorded using field notes and observation sheets.

Structured interviews were conducted individually with each participant using 8-10 guiding questions developed to explore students' learning experiences, comprehension, preferences, and challenges when using interactive audio-visual learning videos. The interviews were video-recorded to ensure the accuracy of the collected data and to capture participants' non-verbal expressions, which are particularly important when conducting research involving hearing-impaired students. Documentation in the form of photographs taken during the interview sessions was also collected as supporting evidence of the research process.

The collected data were analyzed using thematic analysis following the procedures proposed by Braun and Clarke (2006), which include familiarizing with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. This analytical approach enabled the researcher to identify meaningful patterns that represented the participants'

experiences in using interactive audio-visual learning videos.

To ensure the trustworthiness of the findings, the study applied method triangulation by comparing data obtained from observations, interviews, and documentation, as well as source triangulation by comparing responses between the two participants. Ethical considerations were addressed by obtaining permission from the school before conducting the research, informing the participants about the purpose of the study, and maintaining the confidentiality of their identities throughout the research process.

C. Findings and Discussion

Based on the analysis of classroom observations, interviews, and documentation, three major themes emerged regarding hearing-impaired students' experiences in using interactive audio-visual learning videos to enhance listening comprehension. The identified themes are presented in Table 2.

Table 2. Themes Identified from the Data

Theme	Categories	Evidence
Interactive Audio-Visual Videos Increased Students' Engagement and Motivation	Interest in learning, enjoyment, active participation	Observation and interview data
Visual Elements Facilitated Comprehension	Pictures, text, contextual information, visual support	Observation and interview data
Challenges in Using Interactive Audio-Visual Videos	Limited auditory access, video pace, information processing difficulties	Observation and interview data

1. Interactive Audio-Visual Videos Increased Students' Engagement and Motivation

One of the major themes that emerged from the data was the increased engagement and motivation of hearing-impaired students when learning through interactive audio-visual videos. Observation data showed that both participants paid close attention to the learning materials, remained focused on the visual content, and actively responded

to the teacher's instructions during classroom activities. Although their levels of participation varied, both students demonstrated positive attitudes toward video-based learning.

The interview data further supported these findings. Student 1 explained:

"I like it because learning while watching is fun." (Student 1)

Similarly, Student 2 stated that learning through videos was more enjoyable than conventional classroom instruction. Both participants also explained that the combination of pictures, written text, and moving visual content made learning more interesting and less monotonous. These responses were consistent with classroom observations, where both students remained attentive throughout the lesson.

These findings indicate that interactive audio-visual videos create a more engaging learning environment by combining visual stimulation with meaningful learning activities. The participants demonstrated behavioral engagement through active participation and emotional engagement through their positive responses toward learning

with videos. This finding supports the student engagement framework proposed by Fredricks et al. (2004), which includes behavioral, emotional, and cognitive engagement. It is also consistent with Çakir (2016) and Wang (2018), who found that audio-visual materials promote learner participation and classroom engagement by providing meaningful visual contexts. For hearing-impaired students, visual stimulation appears to play an even greater role because it offers an accessible way to interact with learning materials. Therefore, interactive audio-visual videos contribute to creating a more engaging and inclusive English learning environment.

2. Visual Elements Facilitated Comprehension

The second theme revealed the important role of visual elements in supporting students' comprehension of English learning materials. Both observation and interview data showed that participants relied primarily on pictures, written text, captions, and contextual visual information rather than audio when understanding the lesson.

Student 1 explained:

"There was a picture of a fruit with its English name written below it, so I understood that the word was the English name of the fruit shown in the picture." (Student 1)

The student further stated:

"It was easy because the pictures and the text were shown together." (Student 1)

Similarly, Student 2 identified pictures and written text as the most helpful components of the videos. Observation data confirmed these responses, showing that both participants consistently focused on visual information before answering questions or completing classroom tasks.

These findings suggest that visual information functioned as the primary source of meaning during listening activities. Rather than serving merely as supplementary aids, pictures, captions, and contextual visual cues enabled students to construct meaning and connect new vocabulary with their existing knowledge. This finding supports Mayer's Cognitive Theory of Multimedia Learning (2020), which argues that meaningful learning occurs when learners process coordinated visual and verbal

information. It also aligns with Marschark and Knoors (2019), who explain that hearing-impaired learners rely heavily on visual and multimodal representations to access language input. Consequently, integrating pictures, written text, and contextual visuals can substantially facilitate listening comprehension for hearing-impaired students.

3. Challenges in Using Interactive Audio-Visual Videos

Although participants generally expressed positive experiences with interactive audio-visual videos, several challenges also emerged during the learning process. These challenges were primarily related to hearing limitations, information accessibility, and the pace of video presentation.

Student 1 explained:

"The difficulty is that there is no sound. Because I have difficulty hearing, it would be easier if there were sound."
(Student 1)

The student also suggested:

"Maybe use videos that are easier to understand." (Student 1)

Meanwhile, Student 2 reported that captions disappeared too quickly and that rapid scene transitions made

information difficult to process. Observation data further showed that both students occasionally required additional teacher assistance and extra time to understand certain parts of the videos.

These findings indicate that accessibility depends not only on the availability of visual supports but also on how information is organized and presented. Although visual elements facilitated comprehension, excessive information, rapid pacing, and complex presentations occasionally increased learning difficulties. This finding is consistent with Rose and Dalton (2019), who argue that hearing-impaired learners have diverse communication needs and therefore require flexible instructional materials. It also supports Sweller's (1988) Cognitive Load Theory, which explains that learners experience comprehension difficulties when instructional materials present information too rapidly or with excessive cognitive demands.

Likewise, Mayer (2014) emphasizes that multimedia learning should minimize unnecessary cognitive processing through appropriate pacing, clear visual organization, and meaningful

integration of visual and verbal information. Therefore, interactive audio-visual learning videos should be designed with readable captions, appropriate pacing, simplified content, and accessible visual organization to maximize learning opportunities for hearing-impaired students.

D. Conclusion

This study explored the experiences of hearing-impaired students in using interactive audio-visual learning videos to support listening comprehension. The findings revealed that the use of interactive audio-visual videos generally provided positive learning experiences by increasing students' engagement, supporting comprehension through visual elements, and offering meaningful learning opportunities despite several challenges related to accessibility and information presentation.

The study highlights the important role of visual supports, such as images, text, and contextual cues, in helping hearing-impaired students understand learning materials and participate more actively in classroom activities. At the same time, the findings indicate the need for

accessible and well-designed instructional materials that accommodate students' diverse learning needs. Therefore, this study contributes to the growing body of research on inclusive language learning and provides practical insights for educators in developing more effective audio-visual learning materials for hearing-impaired learners.

Further studies could explore how specific features of interactive audio-visual videos, such as captions, sign language interpretation, visual pacing, and interactive elements, influence hearing-impaired students' comprehension and learning experiences. Additional research may also investigate the use of interactive audio-visual media in different language learning contexts and examine its impact on various aspects of language development, including vocabulary acquisition, listening comprehension, and student engagement.

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