

# Analysis of the Utilization of Technology-Based Learning Media in Elementary School Students' Listening Skills: A Systematic Literature Review

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**Abstract.** The ability to convey messages through sounds is known as language skills, with listening skills being one of its most essential components. Listening skills are developed by children before they can speak, read, and write. However, these skills are often neglected, which affects other language skills. To improve students' listening skills, it's necessary to use innovative and creative learning media. Learning media is a teaching strategy employing innovative learning tools to achieve the intended learning objectives. This research aims to provide an in-depth understanding of using technology-based learning media to improve students' listening skills. After analyzing 24 articles using the Systematic Literature Review (SLR) method, the study concludes that technology-based learning media positively influences students' listening abilities. Using technology-based learning media during the learning process enhances students' enthusiasm and interest in learning. Learning media positively influences students' listening abilities. Using technology-based learning media during the learning process enhances students' enthusiasm and interest in learning. The analysis results indicate that using technology-based learning media, such as podcasts, animated videos, and audiovisual materials, has a positive impact on students' listening skills. The observable outcomes include increased student interactivity and improved understanding of a broader and deeper context regarding information.

**Keywords:** Elementary Education; Learning Media; Listening Skill; Technology; Systematic Literature Review.

## 1. Introduction

Learning media serves as a tool that assists teachers in the learning process, playing a crucial role in achieving the desired learning objectives. Learning media comprises several types, including audio, visual, and audio-visual. The presence of learning media in the teaching process can generate new desires and interests, stimulate motivation, and provide encouragement for learning activities, even influencing the psychological aspects of learners. The use of learning media during the learning orientation phase significantly enhances the effectiveness of the learning process and the delivery of messages and lesson content at that moment. Additionally, the primary function of learning media is to serve as a support tool in the teaching process, influencing the atmosphere, climate, and learning environment created. Furthermore, the use of media during the orientation phase of learning makes the educational process more effective and supports the delivery of learning objectives and messages. (Mukarromah & Andriana, 2022).

In the 21st century, teachers must be more creative in designing learning media. In the present era, technology has rapidly advanced, and teachers must deeply engage with technological developments. With the presence of technology, it can potentially bring about significant changes in education, particularly in terms of quality. Information can be easily accessed through technology, providing flexibility as it can be accessed anytime. If a teacher possesses proficient technological skills, it can significantly impact the teaching process by enabling the creation of diverse and up-to-date learning media that align with the current trends.

Additionally, a teacher's competence in technology will have a positive impact by offering guidance to students in transparent technology usage, as is prevalent in today's digital age. Digital learning media offer various features and advantages that enrich students' learning experiences and facilitate their understanding of concepts. The use of learning media has a positive impact on students' achievements and encourages them to become more active in engaging with technology in their education (Wardani et al., 2024).

Consistent with the statement above, technological advancements will also impact students' language skills. Language skills refer to the speaker's or writer's ability to convey messages to listeners or readers through symbols of sound (letters) (Tantawi, 2019).

Language skills that students need to master consist of four skills: listening skills, speaking skills, reading skills, and writing skills. These four skills are interrelated and integrated.

Listening skills are a crucial aspect of language learning. Through listening, students receive various information, including knowledge and other content. However, the general public often underestimates listening skills (Dewi et al., 2022).

Indonesian Language is a mandatory subject in the formal education system in Indonesia. In the Indonesian language curriculum, students are required to truly master listening skills to process the information they receive effectively. Many factors influence students' listening skills, and one of them is the use of learning media that tends to be monotonous, fails to capture students' attention, and does not incorporate up-to-date media.

Listening skills are often overlooked in the elementary education curriculum, despite their crucial role in developing students' communication abilities and comprehension. In today's digital era, technology-based learning media have significant potential to enhance the effectiveness of teaching these skills. However, despite the implementation of various technological media, there remains a lack of understanding regarding their direct impact on the development of listening skills in elementary school students. The absence of a clear consensus on the effectiveness of technology-based learning media creates challenges in implementing more effective teaching strategies.

The neglect of listening skills can negatively affect students' literacy development and comprehension abilities in the long run. Weak listening skills can impact students' overall communication abilities, which in turn affects other skills such as reading, writing, and speaking. Therefore, it is essential to explore and analyze the use of technology-based learning media as a means to improve listening skills at the elementary education level.

This research aims to identify and provide a comprehensive understanding of the use of technology as a learning media to support the learning process, aiming to achieve the desired learning objectives. The goal is to deliver meaningful and understandable learning experiences for students aligned with their developmental stage.

### **1.1. Problem Statement**

The 21st century is marked by rapid advancements in science and technology, which bring significant changes, including shifts in learning paradigms such as curriculum, media, and technology (Rahayu et al., 2022). 21st-century education is not only centered around students needing to possess 6Cs thinking skills but also requires educators, as facilitators, to be more creative in designing the learning process, for example, by using more innovative teaching media and keeping up with current developments. Although listening skills are an essential component of language learning and play a crucial role in students' literacy development, listening abilities are often neglected in the elementary education curriculum. The challenge is further heightened by the digital age, where technology-based learning media has the potential to enhance the effectiveness of teaching these skills. However, there is no clear consensus on the effectiveness of technology-based learning media in developing listening skills in elementary school students. Various technological media have been used, but systematic reviews evaluating their direct impact on listening skills remain limited. This has led to shortcomings in developing listening skills among elementary school students, which can affect their literacy and comprehension abilities in the long term. Weak skills can impact

students' overall communication and learning capabilities, as listening is a crucial component of language learning that influences other skill areas such as reading, writing, and speaking.

Therefore, this study aims to identify, analyse, and synthesize existing literature on the use of technology-based learning media in the development of listening skills at the elementary school level, as well as to identify research and practice gaps in this field. Listening skills are an integral part of students' literacy development and language proficiency. By enhancing listening skills through the use of technology-based learning media, students can achieve better communication abilities, which will support their success in both academic fields and daily life.

## 1.2. Related Research

Technology-based learning media to enhance students' listening skills is not new; several studies have addressed technology-based learning models. Some research has examined this, such as (1) the influence of using interactive multimedia learning media on listening skills in the Indonesian Language subject for fifth-grade students. (Sumiati et al., 2023) (2) The effectiveness of audio-visual media on listening skills in thematic learning, theme 8, sub-theme 3, lesson 1 for students (Nabila & Winanto, 2022); (3) Podcast as a learning media for listening skills in fairy tale stories for second-grade students at SDN Pasirangin (Pratiwi et al., 2022).

This research provides a novel contribution by thoroughly and comparatively exploring various forms of learning technology specifically aimed at developing listening skills among elementary school students. The study discusses a range of media, including animations, podcasts, e-books, and interactive media such as Quizizz and Animaker, while analyzing the comparative effectiveness of these media in enhancing listening skills. Furthermore, this research not only assesses the effectiveness of technological media in learning but also addresses the challenges and practical solutions faced during implementation, particularly in elementary schools with limited technological infrastructure.

## 1.3. Research Objectives

This study aims to gather information on the use of technology-based media to support the process of learning the Indonesian language, specifically in the aspect of listening skills. The discussion in this research includes:

- a. An overview of the Indonesian language learning process, particularly listening skills, using technology-based learning media.
- b. The results or impact of the learning process on students' listening skills in Indonesian language lessons using technology-based media.
- c. The challenges or obstacles faced by teachers in using technology to create an engaging learning experience.

## 2. Theoretical Framework

### 2.1. Understanding and Benefits of Listening Skills

Listening skills are one of the fundamental skills among the four language skills. Listening is a process of actively hearing verbal symbols with full attention, understanding, appreciation, and interpretation to obtain information, grasp the content or message, and understand the meaning of the communication conveyed by the speaker through spoken language (Rahman et al., 2019). Listening is a skill that requires focus and concentration to understand the material being listened to. At a more advanced level, listening skills enable an individual to express their understanding through writing skills (Alifa & Setyaningsih, 2020). The current development of technology demands that society be able to listen to various information quickly and accurately.

Listening is a crucial factor in every person's life to ensure effective communication between individuals. It serves as a foundational skill for analyzing facts, allowing individuals to know and deeply understand the meanings contained within those facts. As explained by Rahman et al. (2019) Evaluating facts aims to determine the acceptance or rejection of facts by the listener,

influenced by the credibility of the speaker and the content of their message. Subsequently, the listener will gain the inspiration needed from that activity.

## **2.2. Definition, Functions, and Roles of Learning Media**

The term 'media' originates from the Latin word 'medius,' which means middle, intermediary, or conduit. Learning media refers to materials or tools that serve as a means to convey information to learners, to facilitate communication between teachers and students (Herliana & Anugraheni, 2020). Learning media can be categorized based on their presentation forms, including print materials, projection media, audio, audiovisual, television media, and multimedia. Technology-based learning media facilitate access for both teachers and students, enhancing creativity in the learning process with a focus on digitalization. Currently, various types of technology and learning media are readily available, creating a more flexible learning environment in terms of location and time. The use of these media also helps improve direct interaction between teachers and students, encouraging learners to be more motivated in exploring new knowledge.

In general, learning media function as intermediaries for teachers in delivering instructional material, making it easier for students to understand. The presence of learning media can also stimulate students' motivation to learn and foster their interest in studying (Erhami et al., 2023). In addition, educational media play a crucial role in the learning process aimed at achieving learning objectives. The roles of learning media include: (1) serving as tools that support knowledge design; (2) acting as information resources to help students seek knowledge; (3) facilitating students in expressing arguments; (4) enhancing the effectiveness and efficiency of the learning process; and (5) serving as aids in achieving educational goals (Nurfadhillah et al., 2021).

## **2.3. The Role of Technology as Learning Media**

In the context of education, technology plays a crucial role in developing students' cognitive skills and digital competencies. The use of tools such as computers, tablets, and educational apps allows students to access information more quickly and efficiently. This not only accelerates the learning process but also supports the development of critical and analytical thinking skills. For example, through simulations and technology-based learning programs, students can explore complex concepts in a safe and interactive virtual environment.

Technology provides new ways to deliver instructional content through interactive and multisensory approaches. In the context of listening skills, media such as educational videos, podcasts, and interactive audio apps can enhance students' learning experiences by stimulating multiple senses simultaneously. For example, videos that combine sound, images, and text help students better understand the context compared to just listening to audio alone. The use of such technology makes the listening process more engaging and comprehensive, and assists students in connecting the information they hear with relevant visuals and text.

In line with the views expressed by Hidayatullah et al. (2023), in facing the digital and globalization era, education must continually adapt to technological advancements. Effective and targeted integration of technology is expected not only to enhance the quality of learning but also to reduce disparities in access to education. With wise utilization of technology, education in Indonesia will experience significant acceleration, producing a generation that is more competent, knowledgeable, and ready to compete on a global scale. Therefore, improving the quality of educational content is a crucial step to ensure that technological developments in the education sector provide optimal benefits for all of Indonesian society.

Technology plays a crucial role in enriching the listening learning experience for elementary school students by providing interactive, varied, and personalized learning media. Through access to diverse educational resources, targeted assessment tools, and innovative teaching approaches, technology can effectively enhance students' listening skills. Thoughtful implementation of technology in listening instruction can help elementary students develop better listening abilities while also increasing their engagement and motivation in the learning process.

### 3. Method

#### 3.1. Research Design

This research employs a systematic literature review method to address the research question systematically, following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) model (Harie et al., 2023). Systematic Literature Review (SLR) is a method for collecting, critically evaluating, integrating, and presenting findings from various research studies on the observed research topic (Pati & Lorusso, 2018). The analysis in this study aims to identify and provide a comprehensive understanding of using technology as a learning medium to enhance students' listening skills by examining previous research studies. In November 2023, a literature search was conducted using the Publish or Perish application with an online database sourced from Google Scholar. The use of the systematic literature review (SLR) method in this research aims to gather a substantial amount of information that can address questions related to the use of technology as a medium in education to enhance students' listening skills. This approach allows researchers to obtain more comprehensive information and facilitates the presentation of large amounts of data. The steps involved include: formulating research questions, determining data criteria for processing (including inclusion and exclusion), searching for relevant literature, assessing the quality of the readings, extracting and analyzing data, and summarizing and presenting the results.

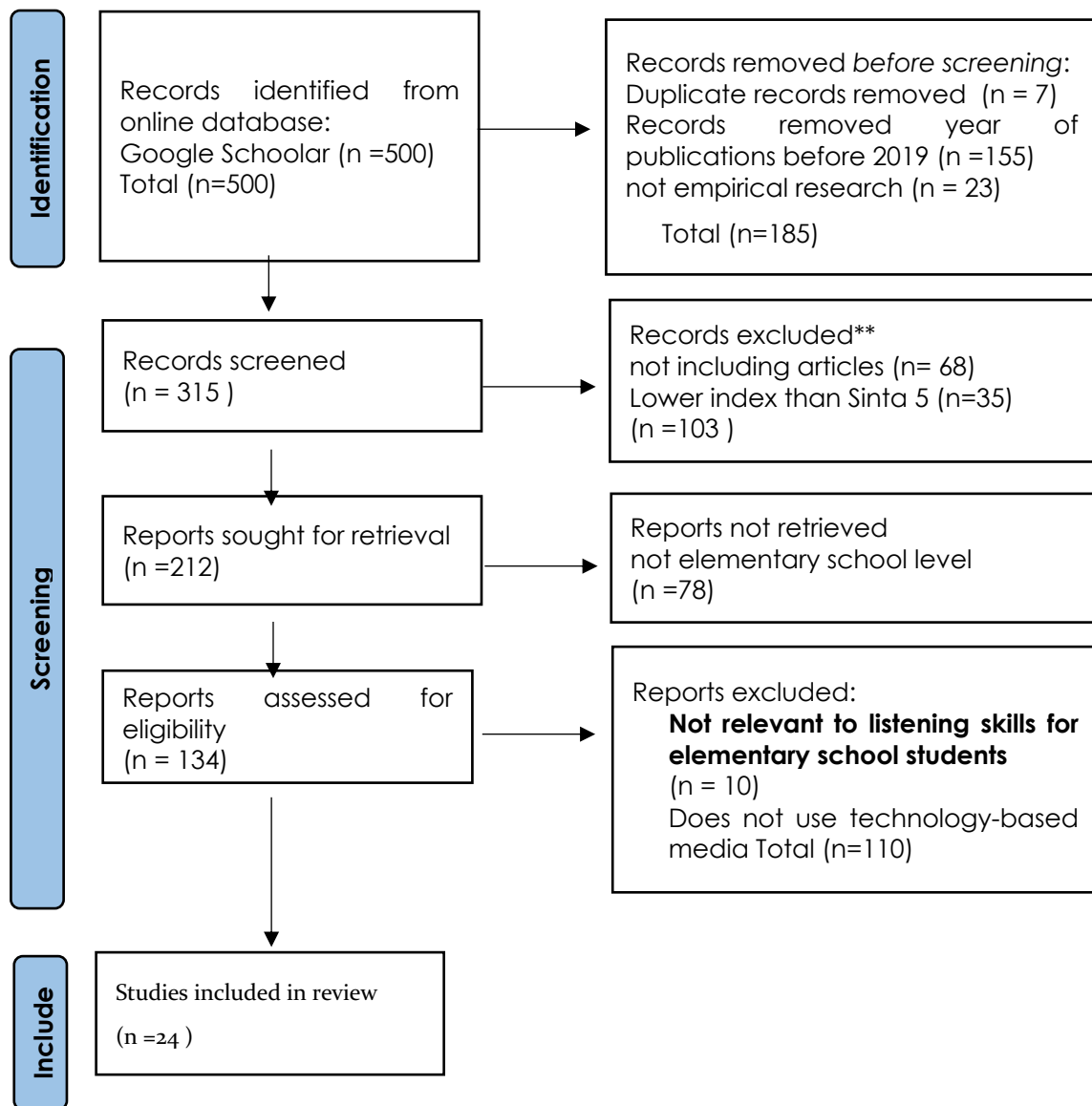
#### 3.2. Data Collection

On October 5, 2023, the researcher conducted a literature search using Google Scholar with online database sources. The selection of research studies was based on the criteria outlined in the following Table 1.

**Table 1.** Criteria for Article Selection

<b>Selected Article Criteria</b>	<b>Criteria for Non-Selected Articles</b>
Publication years of the articles range from 2019 to 2023	Publication year of the articles before 2019.
Empirical research	Not empirical research.
Article	Excluding articles (theses, dissertations, etc.).
The journal is indexed in SINTA with a minimum score of 5.	Journal index lower than SINTA 5.
We are utilizing technology-based learning media.	Not using technology-based learning media.
Listening skills for elementary school children.	Listening skills are not for elementary school children.

The search was conducted using the Indonesian keyword, '*keterampilan menyimak anak SD*' (listening skills of elementary school children). A total of 500 articles were retrieved from Publish or Perish. Subsequently, the selection process involved reviewing titles, abstracts, and entire articles based on the criteria mentioned in the table above. The following stages included coding, extraction, and analysis by manually extracting and documenting the required information in Microsoft Word. After completing all the stages, 24 articles that met the predefined criteria were identified. The comprehensive process of article selection is outlined in the Figure 1 below.



**Figure 1.** Article Selection Process  
Adapted from Harie et al. (2023)

### 3.4. Data Analysis

The data obtained were then compiled in a spreadsheet from the articles, including the authors' names, publication years, research methods, technology media used, research findings, and other supporting information. Once everything was completed, the researcher integrated the collected information into a cohesive whole to answer the research questions. As stated by Pati, a systematic literature review (SLR) is a methodical approach to collecting, critically evaluating, integrating, and presenting findings from various studies on a research question or topic of interest (Pati & Lorusso, 2018).

### 4. Findings

From the selection process, 24 articles were obtained and analyzed in depth. The following Table 2 presents a summary of the analysis of articles on the use of technology-based learning media in developing listening skills among elementary school students.

**Table 2.** Potential use of technology in learning media

Source references	Method	Technology media used	Findings
(R. Pratiwi & Zulfadewina, 2022)	A quasi-experimental method with a post-test-only control design involving a control group and an experimental group was employed. The research design is a post-only control design using two randomly selected groups.	The audio-visual media used in the application is called Video Animaker.	The experimental class showed a more significant improvement than the control class, indicating that learning using audio-visual media based on Animaker is more effective than conventional learning.
(Dewi et al., 2022)	The research and development method utilized the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation).	Digital book media (e-book)	Based on students' responses regarding the used media, the conclusion is drawn that the media is highly suitable for testing. During the usage of the media, students also paid close attention. After the media trial with students, an evaluation related to students' listening skills was conducted, and the results obtained from the evaluation indicated that students were able to answer it. This implies that students paid careful attention to the media during the media trial.
(Fujiastuti et al., 2019)	The research and development method employs the 4D model (Define, design, develop, disseminate).	Flash application/Adobe Flash	Based on the evaluation results regarding the aspects of media and content, it is concluded that this Flash media is highly suitable and can be used in the learning process for both teachers and students.
(Sumiati et al., 2023)	Quantitative experimental approach with a pre-experimental design, specifically the type one group pretest-posttest design.	Interactive learning multimedia (presentation of materials using PowerPoint and evaluation related to students' listening skills using Quizizz).	Based on the test results conducted by the researcher, there is a significant influence between the use of interactive learning multimedia and students' listening skills in the Indonesian Language subject. Furthermore, the impact of interactive multimedia on students'

Source references	Method	Technology media used	Findings
			listening skills is also reinforced nurf the student response questionnaire to the conducted learning, and the conclusion drawn from the obtained results falls within the exciting criteria.
(Nalapraya et al., 2023)	The research and development method uses the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation).	Song with animation media based on Lectora Inspire	Based on the validation results of content, design aspects, and effectiveness evaluated through pre-test and post-test results, it is concluded that the song with animation learning media based on Lectora Inspire is proven effective in improving students' listening skills.
(Kinanti et al., 2022)	Classroom Action Research Method	The use of VideoScribe media.	Overall, the learning process has been implemented well and planned. This is evidenced by the improvement in students' learning outcomes in listening skills for fairy tales and digital literacy using Video Scribe media. Teachers have also effectively managed their time to ensure the learning process aligns with the planned objectives.
(Zein Rismala & Nuroh, 2023)	Qualitative descriptive method with a case study approach.	The use of animated video media.	Using animated videos to develop students' listening skills for fairy tales has been enjoyable. Post-implementation interviews with students revealed positive responses, with the majority expressing enthusiasm and actively requesting the continued use of animated media in future lessons.
(Nabila & Winanto, 2022)	Pseudo or quasi-experimental research uses a research design with an unequal control group design.	Audio-visual media	Using audio-visual media improves students' listening skills more effectively than conventional media.



Source references	Method	Technology media used	Findings
(Popiyanti et al., 2023)	Experimental method with a Pre-Experimental Designs design.	Animated cartoon media film	Using animated cartoon film media in the classroom undoubtedly positively impacts students' learning outcomes.
(Wulandari et al., 2023)	Accurate Experimental Design method using the Pretest-Posttest Control Design.	Audio-visual media	The use of audio-visual learning positively influences students' listening skills.
(Erhami et al., 2023)	The development method uses the ADDIE model	Flipbook Media	Flipbook learning media is very suitable and helpful for folklore material in elementary school.
(Sabillah, 2020)	Classroom research action	Audio media (tape recorder)	Audio media (tape recorder) can improve students' listening skills in the learning process in elementary school.
(Rahmawati, 2021)	Qualitative research approach with case study method	Animated film media (Nusa and Rara)	Based on the results of interviews with students, the students liked the learning process and looked very enthusiastic, as evidenced by their various expressions during the learning process. Students also find it easier to understand and comprehend through the animated media of Nusa and Rara films.
(Azizah & Nugraheni, 2020)	Descriptive qualitative research method	Animation Video Media	In learning poetry using animated videos, students were enthusiastic and more interested in listening to the poetry presented using animated videos. The student subjects observed were 10 out of 27 students, of whom 5 were in the excellent category, 3 were in the fair category, and 2 were in the poor category regarding linguistic aspects, implementation aspects, and attitude aspects.

Source references	Method	Technology media used	Findings
(Rafiqah et al., 2023)	Qualitative Descriptive	Malin Kundang fairy tale film media	The results of research on the subject of class V students, with a total of 24 students, obtained good results, namely that during the learning process, the students were enthusiastic about listening and showed an active response in class. The results of interviews conducted with the Class V teacher also concluded that listening activities using the Malin Kundang Fairy Tale film media made students more interested in the material provided. Students can also respond to the films they watch, and students are quick to respond to several questions asked based on the listening indicators that have been set.
(Lustyantie & Iskandar, 2023)	Descriptive qualitative method	The media used is YouTube	The ability to listen to students' short stories using YouTube media based on character education is adequate. The millennial generation uses YouTube as a learning medium, allowing students to learn without knowing time and space because of its ease of access. Apart from that, using visualisation on YouTube makes learning more enjoyable.
(Muttaqillah, 2023)	Experimental Comparative Research	Google Media	Form Based on the comparisons, the results showed that the student's ability to listen to writing was better than their ability to listen to oral tests. The influence of Google Forms was only attended by 18 out of 28 students due to several obstacles such as network or quota.

Source references	Method	Technology media used	Findings
(Nabella, 2022)	Development method with ADDIE model research design	Learning videos based on Adobe Premiere Pro Software	In the learning process using videos, there are still many students who do not understand the content of the videos and have difficulty processing all the information and each content of the material because the learning videos are too monotonous and too long, so they affect students' listening skills, so development is needed. The results of the development of the learning videos that have been carried out have positively impacted students, such as increasing motivation, time, and demonstrations of exciting material.
(Oktafiani et al., 2022)	Experimental method with the experimental model	Audiovisual media	Audio-visual media has a positive impact on students' listening skills. The effect on the experimental group showed better results when compared to the control group, as evidenced by the average learning outcomes in the experimental group being better than those of the control group.
(T. P. Pratiwi et al., 2022)	Descriptive method	research Podcast media for fairy tales	The students seemed enthusiastic and excited while using podcasts as a learning tool. However, the teacher could not manage time effectively, leading to the failure to evaluate the projects the students had worked on. This issue occurred because the fairy tale podcast was too long.
(Nurdawani et al., 2022)	The quasi-experimental method with a pretest-posttest nonequivalent control group design	Audiovisual media	The results obtained using audio-visual media based on local cultural stories positively affect students' listening abilities. Learning strategies using audio-visual media can be effective in

Source references	Method	Technology media used	Findings
			students' listening learning. Still, they must be supported by adequate facilities and infrastructure in the classroom so that the learning process can run as expected.
(Raharjayanti , 2021)	Quasi-experimental method	Learning media from YouTube	The use of learning video media from YouTube is effective for material on listening skills and singing Macapat songs when compared with those who do not use media.
(Naidah et al., 2023)	Classroom Action Research Method	Video media using YouTube	The improvement in this research was not only in the aspect of learning achievement but also in attitudes toward the learning process, and the learning methods teachers used were improving. Based on the results obtained by using YouTube media, it makes it easier for students to learn and arouses student enthusiasm in participating in the learning process compared to previous learning (without YouTube media)
(Oktafiani et al., 2022)	Quantitative quasi-experimental method	Cartoon animated media film	The results obtained are that in the learning process using cartoon animation media, there is an influence on students' listening skills. However, several things influence students' non-optimal listening skills. These internal factors come from within students who do not have the intention and desire to focus and will experience difficulties in the listening process. Apart from that, external factors are the student's environment.

## 5. Discussion

Based on Table 2 above, it can be seen that using technology to assist the learning process positively impacts students' listening skills. Technology will undoubtedly make it easier for teachers to create more varied and exciting learning media.

The use of digital learning media, such as audio-visual and interactive media like animated videos (Animaker), Quizizz, and podcasts, not only positively impacts the enhancement of students' listening skills but also encourages more active student engagement in the learning process. These results indicate that students participate more actively and show higher interest in learning when the educational media used are more engaging and interactive. As stated by Kandia et al. (2023), the utilization of media in the orientation phase of learning enhances the effectiveness of the learning process and the delivery of educational missions and messages. In addition, to stimulating students' interest and motivation, the presence of media as a learning aid can also improve students' understanding and present data in an engaging and reliably.

The use of technology-based learning media, such as audio-visual materials, animated videos, and interactive media (like Quizizz), significantly enhances listening skills. The implications of these findings are crucial in the context of elementary school education, where listening skills serve as the foundation for other language skills. Therefore, teachers need to be more aware of the benefits of utilizing this technology to provide a more engaging and effective learning experience. For instance, research conducted by Sumiati et al. (2023), using interactive media showed that students were more interested and had better listening skills. Another study by Nalapraya et al. (2023), which employed animated songs, also successfully improved students' listening skills, demonstrating that variation in learning media can enhance motivation and student engagement.

However, several challenges still need to be addressed. If viewed from the teacher's perspective, using technology as a learning medium will provide many benefits and conveniences; it just requires tools or supporting learning facilities such as projectors, speakers, etc. Judging from the articles above, many technologies can be used to help teachers train students' listening skills, including podcast media, animation, films, and others. With technological developments in the current era, teachers only need to adapt the media they want to use to the character and age of their students. For example, to train lower-class listening skills, they can use animation or brightly colored film media to attract students' attention. The only thing that needs to be considered when selecting media is duration. For example, for lower classes, you can choose a duration that is not too long so that students do not get bored because listening is a tedious activity. This is one of the challenges that a teacher must face in training listening skills. In line with the opinion expressed by Razi et al. (2021) a teacher's strategy is a set of plans and arrangements that they utilize in their lesson, including the use of different techniques and the use of different resources or strengths in a study. The strategy is created with a specific learning objective in mind.

However, the reality that educators often face is that there are still many obstacles. The obstacles often seen in the field today are as follows: First, many teachers may experience limited knowledge and skills in using digital learning tools and applications. This may impact their ability to design compelling learning experiences and adapt materials to technological needs. The research by Oktafiani et al. (2022) Highlights the need for the development of learning materials to avoid being monotonous and overly lengthy, as this can disrupt students' understanding.

In addition, aspects of accessibility and technological infrastructure are essential obstacles. Not all schools have adequate access to hardware, stable internet connections, and educational software. This inequality can create gaps in the use of technological media between schools, limiting the potential for its use as an equitable learning tool. In the study conducted by (Nabila & Winanto, 2022) It was found that the use of audio-visual media needs to be supported by adequate facilities to optimize learning outcomes.

Preparing for learning with technological media is also a challenge. This process can take significant time, especially if teachers have to create custom content or adapt learning materials. This can pressure teachers who may already have a reasonably high workload.

Skepticism and uncertainty regarding the effectiveness of technological media also need to be overcome. Some teachers may be doubtful about the extent to which the use of technology can improve students' listening abilities. Building confidence and motivating teachers to adopt technology as a learning support tool is crucial. In line with the opinion expressed by Mu'min et al. (2023), the teacher is one of the key elements in achieving the educational objectives. It can be denied that the teacher is the primary executor of education. As an educator or instructor, the teacher plays a crucial role as a determining factor in the success of every educational effort.

By realizing and overcoming these challenges, teachers can more effectively integrate technological media in developing students' listening skills in elementary schools. Collective efforts from schools, governments, and educational institutions can help create an environment that supports technology as an integral tool in the learning process.

Looking at the use of technology-based learning media from the perspective of students, it is clear how they respond to and are influenced by technology in learning listening skills. The findings indicate that the use of media such as Animaker videos and animations elicits positive responses from students, suggesting that technology can enhance listening skills and student engagement. When students are invited to learn through interactive and engaging media, they become more enthusiastic about participating. In the research conducted by Zein Rismala and Nuroh (2023), it was noted that students felt happy when learning with animated video media, demonstrating that creative ways of delivering material can capture students' attention and make them more active in the learning process.

Various and exciting technological media significantly influence students' listening abilities. The positive impacts include increasing students' creativity, independence, and critical thinking abilities when learning. The hope is that information technology can improve students' cognitive abilities and academic performance. These findings also indicate that the use of technology in learning can help students develop their ability to evaluate information. With access to various media such as podcasts and videos, students learn to distinguish between relevant and irrelevant information. This was evident in the research by Azizah and Nugraheni (2020), where students became more critical of the material presented. This critical thinking is crucial for developing better listening skills.

Students also provided important feedback regarding the effectiveness of learning media. Findings from several studies, such as that by Wulandari et al. (2023), indicate that students responded well to audio-visual media, reflecting a stronger connection to the material being taught. This positive response suggests that students experience direct benefits from the use of technology-based media in their learning, which motivates them to continue improving their listening skills.

The challenges faced by students in using technological media to improve their listening skills in elementary schools include several crucial aspects. First, limited access to technology is a significant obstacle, as not all students have equal access to technological devices or internet connections at home. This creates a gap in their ability to access online learning materials outside the school environment. The solution that can be taken is to launch a technology access program that ensures every student has an adequate device and internet connection, perhaps through a grant program or collaboration with related parties. Research by Nabella (2022), indicates that this issue can impact students' overall learning experience, creating a gap in achieving listening skills.

Furthermore, the potential for distraction and attention ablation poses a severe challenge. Distractions originating from the technological devices used can affect students' focus in the listening process. Establishing policies that regulate technology use outside of class time and guiding students on using devices productively can help manage this issue.

Listening skills are an essential component of language skills. Listening skills are fundamental skills that students must master. Of course, this has been done from an early age, for example, by listening to parental orders and conversations expressed by parents. Therefore, students must continue to train their listening skills with more complex goals. If students' listening skills have problems, this will impact other language skills. Not only that, if students have problems listening, then students will also have difficulty interpreting what they hear. From the results of the analysis that has been carried out, training students' listening skills using attractive, up-to-date, and varied learning media can help train students' listening skills. Therefore, the primary key to this is that teachers must be aware of technological developments.

One piece of evidence found that the use of technology as a learning medium has a significant influence is stated in research conducted by Sumiati et al. (2023) Regarding students' responses to learning that has been carried out using interactive multimedia learning. They obtained an overall questionnaire score of 221 with an average of 8.5, and the total percentage of overall questionnaire scores was 2210 with an average of 85%, which is in the Very Interesting criteria.

Listening skills, which include hearing and understanding information verbally, are crucial in achieving academic success for elementary school (SD) students. These skills significantly contribute to several aspects of student learning and development. First, listening skills support understanding of lesson material. Through listening attentively, students can capture the information, concepts, and details the teacher conveys. This helps them to understand the lesson content in more depth.

Furthermore, listening skills also play a role in developing students' vocabulary. Through listening activities, students are exposed to various words and phrases, which contribute to expanding their vocabulary. That way, students' language skills can develop better. The ability to participate in class discussions results from good listening skills. In the research conducted by Alifa & Setyaningsih (2020), it is stated that listening skills influence students' writing skills, as the information and imagination gained from listening activities can assist students in composing essays.

Through developing listening skills from an early age, students at the elementary school level can build a strong foundation for future academic success. These skills are relevant for understanding subject matter and play an essential role in developing communication and problem-solving skills, preparing students to face the demands of higher education.

Although this research indicates that technology-based learning can enhance students' listening skills, there are several limitations to consider. First, the analysis predominantly employed quasi-experimental designs, which do not fully control for confounding variables, such as students' intrinsic motivation or socio-economic background that may affect access to technology. Additionally, challenges related to technological infrastructure, such as limited internet access, can also impact the effectiveness of technology in the learning process.

This study opens several opportunities for further research. One avenue is to explore the long-term effects of using technology-based learning media on students' listening skills. Additionally, more focused studies examining age group differences and skill levels are needed to understand how various types of technology align with students' cognitive development.

## **6. Conclusion**

This study aims to analyze the use of technology-based learning media in developing elementary students' listening skills. Based on the analysis of 24 articles, it was found that technology media such as animation, audio-visual aids, podcasts, and interactive media significantly enhance students' listening skills. Additionally, interactive media has proven to increase student engagement and active participation in the learning process, indicating that technology use is not only effective for training listening skills but also boosts students' motivation to learn.

These findings highlight the importance for teachers to leverage technology in their teaching, especially in developing students' listening skills, which are a crucial foundation for language development. Teachers should consider appropriate media based on the characteristics and ages of their students, paying attention to duration and variety to avoid monotony. Furthermore, support for technology infrastructure teacher training is essential to ensure the optimal and equitable implementation of technology-based learning media. This research also opens opportunities for further studies on the long-term impacts of using technology in education, as well as solutions to address infrastructure challenges and access to technology in various schools.

### **Limitation**

The author acknowledges that there are limitations in this research analysis that may be of concern to readers, especially researchers who will continue this study. The limitations include the use of a restricted database, specifically only Google Scholar. Additionally, the article analysis is confined to the last five years (2019-2023). These limitations may affect the depth of the analysis conducted. Therefore, to achieve a better level of depth, it is recommended to include additional databases and to extend the range of years to be analyzed.

### **Recommendation**

Based on the research findings, we suggest the following: (1) This study can serve as a foundation for future research on the use of technology media in the listening learning process, particularly focusing on its implementation at the elementary school level. (2) Consider gathering data from various reference sources such as ResearchGate, Scopus, Publish or Perish, and others.

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### **Conflict of Interest**

The researcher declares that there are no conflicts of interest.

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