

NEEDS ANALYSIS OF *TEXT TO SPEECH* BASED WORKSHEETS FOR TENTH GRADE STUDENTS AT THAWALIB GUNUNG PADANG PANJANG

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Abstract

This study aims to analyze the needs for developing a *Text to Speech* (TTS) based listening worksheet (LKPD) to improve Arabic listening skills for tenth-grade students at Thawalib Gunung Padang Panjang. The research employed a quantitative approach using a one-group pretest–posttest pre-experimental design. Data were collected through needs analysis questionnaires administered to both the Arabic teacher and students, focusing on teaching materials, teacher requirements, and student learning needs. The results show that 97.5% of teachers and 97% of students strongly support the development of a TTS-based LKPD. Students expressed the need for listening exercises with clear pronunciation models, repeated exposure, and interactive visual aids, while teachers required materials that facilitate independent practice, save instructional time, and align with the curriculum. The integration of TTS technology leverages existing infrastructure, such as TVs and personal devices, providing an innovative and practical solution to overcome the limitations of current resources. The study contributes to educational practice by offering a student-centered instructional tool that enhances listening skill acquisition, promotes independent learning, and supports effective Arabic language instruction. These findings highlight the potential of technology-assisted worksheets to enrich the learning environment and address gaps in conventional teaching materials.

Keywords: Arabic listening skills, *Text to Speech*, LKPD, student-centered learning, educational technology.



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INTRODUCTION

The rapid advancement of educational technology has significantly influenced teaching and learning practices, particularly in language education (Hasumi & Chiu, 2024; Rahmati dkk., 2021). Various digital tools and instructional media have been developed to facilitate learning processes and improve students' engagement (Rafique, 2022; Yu dkk., 2022). In Arabic language education, the integration of instructional media is increasingly essential, especially in teaching listening skills, which rely heavily on accurate auditory input and careful sound comprehension (Al-Athwary & Lasloun, 2021; Ed-dali, 2024; Seyıdov & Çıtil, 2024). Effective listening instruction requires learning materials that provide clear, repeated, and accessible audio exposure to support learners' understanding of spoken language.

Listening skill serves as the primary gateway in the process of language acquisition (Wang dkk., 2023; Wu dkk., 2025). Learners are generally unable to develop speaking, reading, or writing skills effectively without first being able to recognize and comprehend the sounds of the target language through listening. In the context of Arabic language learning, strong listening skills help learners understand vocabulary, sentence structures, phonological features, stress patterns, and the meanings conveyed in spoken discourse (Alshehri & AlShabeb, 2023; Alzi'abi, 2025). Therefore, listening instruction should be supported by appropriate materials that expose learners to accurate pronunciation and meaningful auditory input.

However, in many Arabic language learning contexts, listening instruction has not yet been optimally supported by adequate instructional materials. An examination of Arabic language textbooks and curriculum guidelines issued by the Ministry of Religious Affairs (KSKK) indicates that listening exercises are still limited in both quantity and variety. Listening activities are often presented in simple and repetitive formats, with minimal variation in task types and insufficient integration of supporting audio media (Jia & Hew, 2022; Shamsi & Bozorgian, 2024; Siegel & Wang, 2024). As a result, students have limited opportunities to practice listening comprehension through diverse and meaningful activities, which may hinder the development of their listening skills.

To achieve instructional objectives in listening, teachers require diverse and well-structured teaching materials that support systematic learning (Chen, 2025; Romiszowski, 2024). One important supplementary material is the student worksheet (LKPD), which functions as a companion to the main textbook. LKPD encourages active student participation through practical activities and exercises, enabling learners to apply knowledge and develop skills progressively (Ardiansah & Zulfiani, 2023; Rahmayani & Atmazaki, 2025; Simangunsong dkk., 2024). When designed interactively and supported by audio media, student worksheets can play a significant role in strengthening listening competence.

In this regard, *Text to Speech* (TTS) technology offers practical potential for developing listening materials (Fitria, 2025; Nurhamidah, 2024). *Text to Speech* technology converts written texts into synthetic speech, allowing teachers to generate clear and consistent audio materials without the need for manual voice recording (Kaur & Singh, 2023; Levine dkk., 2023). Free and user-friendly platforms such as *FreeTTS.com* enable users to produce Arabic speech with relatively natural pronunciation and high audio clarity. These features make TTS accessible for teachers and suitable for integration into student worksheets, thereby enriching the auditory learning environment and supporting repeated and independent listening practice (Guðmundsson, 2025; Yeh, 2024).

Several previous studies have reported positive outcomes from the use of *Text to Speech* in language learning. Indasari (2025) found that TTS based listening materials improved students' motivation and listening skills, while Syarif and Imran (2024) highlighted the role of TTS in supporting Arabic language learning, particularly in enhancing reading comprehension for beginners. Similarly, Yudistiro and Silalahi (2021) demonstrated that the integration of *Text to Speech* and speech recognition technologies contributed to improved pronunciation,

vocabulary mastery, and learner engagement. Despite these findings, most existing studies focus on English language learning or Arabic reading skills, with limited attention given to the development of TTS based listening worksheets tailored to specific institutional and curricular contexts.

Field observations at Thawalib Gunung Padang Panjang reveal that listening instruction still faces several challenges. Listening materials are predominantly limited to written texts without sufficient audio or visual support. Teachers often rely on reading texts aloud, which may be influenced by local accents, cause vocal fatigue, and restrict students' opportunities for repeated and independent listening practice. Additionally, commonly used online resources such as YouTube are often not aligned with students' proficiency levels or instructional objectives and lack integrated visual supports, reducing their effectiveness for listening comprehension.

These conditions have contributed to low listening proficiency among tenth grade students at Thawalib Gunung Padang Panjang. Assessment results indicate that fewer than 40% of students achieved a good or higher level of listening competence, while the majority remained at moderate or low levels. Teachers also reported that students frequently experience boredom due to monotonous instructional methods and limited use of innovative learning media. Considering the characteristics of students in Islamic boarding school environments, where higher Arabic listening competence is required, these issues demand serious attention.

Therefore, there is a clear need to develop student worksheets (LKPD) for listening skills that integrate *Text to Speech* technology as a supporting medium. Such worksheets are expected to complement existing textbooks by providing varied listening exercises, comprehension questions, visual supports, and easily accessible audio materials through QR codes or online links. However, prior to material development, a systematic needs analysis is essential to ensure that the worksheets align with students' actual needs, learning characteristics, and instructional goals. Accordingly, this study aims to analyze the needs of tenth grade students at Thawalib Gunung Padang Panjang as a foundation for developing *Text to Speech* based listening worksheets.

RESEARCH METHOD

Research Design

This study employed a quantitative descriptive research design focusing on needs analysis as the preliminary stage of instructional material development. The design was used to identify students' needs, difficulties, preferences, and learning conditions related to Arabic listening instruction. The findings of this needs analysis were intended to serve as a foundation for developing *Text to Speech* based student worksheets (LKPD) for listening skills.

Participants

The participants of this study were tenth-grade students at Thawalib Gunung Padang Panjang, who were enrolled in Arabic language courses under the KSKK curriculum of the Ministry of Religious Affairs. The participants were selected using a purposive sampling technique, considering their active participation in Arabic listening instruction and their relevance to the objectives of the study. Arabic language teachers were also involved as supporting respondents to provide additional information related to instructional practices and material use.

Research Instrument

The instruments used in this study consisted of a needs analysis questionnaire and semi-structured interview guidelines. The questionnaire was designed to collect quantitative data regarding students' experiences, difficulties, learning preferences, and perceptions of existing

listening materials and media. It covered several aspects, including the availability of listening materials, variety of listening exercises, use of audio media, learning motivation, and students' expectations toward *Text to Speech* based worksheets. The interview guidelines were used to obtain qualitative data from teachers to support and clarify the questionnaire findings, particularly regarding instructional constraints, curriculum implementation, and material limitations.

Research Procedure

The research procedure was conducted in several stages. First, a preliminary observation was carried out to identify general conditions of Arabic listening instruction and the use of instructional materials. Second, the needs analysis questionnaire was distributed to students to collect data on their listening learning needs and challenges. Third, interviews were conducted with Arabic language teachers to gain deeper insights into teaching practices, material availability, and curriculum demands. All collected data were then compiled and organized for analysis to identify priority needs for the development of *Text to Speech* based listening worksheets.

Data Analysis

The data obtained from the questionnaire were analyzed using descriptive statistical techniques, including frequency and percentage analysis, to describe students' needs and learning conditions. The interview data were analyzed qualitatively through data reduction, data display, and conclusion drawing to support the quantitative findings. The results of both analyses were then integrated to formulate a comprehensive description of learners' needs, which served as the basis for the design and development of the *Text to Speech* based LKPD for Arabic listening skills.

RESULTS AND DISCUSSION

This study applied the Define stage of the 4D development model proposed by Thiagarajan, focusing on needs analysis for developing a *Text to Speech* (TTS) based listening worksheet (LKPD) for tenth-grade students at Thawalib Gunung Padang Panjang Islamic Institute. The needs analysis was conducted based on three main aspects, namely: analysis of instructional materials, teachers' needs analysis, and students' needs analysis.

The analysis of Arabic listening materials for grade ten aimed to identify the alignment between the instructional materials, the curriculum, the textbook, the lesson plan (RPP), and classroom practices. The findings revealed that the institution initially attempted to implement the Independent Curriculum, but later reverted to the 2013 Curriculum. Consequently, instructional planning is still based on the Lesson Plan (RPP) rather than on differentiated learning modules. Within this curriculum framework, Arabic language instruction emphasizes the development of the four language skills, with listening skills serving as the foundation for acquiring other skills. Therefore, effective listening instruction requires clear audio input, repetitive practice, and supportive learning media.

The Arabic textbook used is published by the Ministry of Religious Affairs (KSKK) and consists of six chapters. The first semester includes chapters on *introductions and greetings, family and home, and school*. The listening materials include *vocabulary, expressions, and dialogues*, which are appropriate for the students' proficiency level. Accordingly, the first three chapters were selected as the basis for developing the listening worksheet. However, the listening exercises in the textbook are limited in number and variation, and they are not supported by accessible audio media. As a result, listening instruction relies heavily on the teacher's oral delivery during classroom sessions, limiting students' opportunities for independent and repeated listening practice.

Analysis of the learning objectives in the RPP, particularly for the third chapter, shows that listening instruction aims to develop students' ability to comprehend spoken texts, distinguish sounds and structures, connect audio input with contextual meaning, complete sentences or dialogues, and identify correct answers based on listening texts. These objectives require intensive, varied, and repetitive listening activities. Nevertheless, the RPP does not explicitly integrate audio-based or technology-assisted media, nor does it provide a structured listening worksheet. This condition potentially reduces the effectiveness of listening instruction due to insufficient exposure to systematic audio input.

Field observations also indicated that the institution is equipped with supportive infrastructure, including a Smart TV in the classroom. However, this facility has not been optimally utilized for listening instruction, and no dedicated listening worksheet is used consistently. Based on these findings, there is a clear need to develop a *Text to Speech*-based listening worksheet integrated with QR codes, allowing students to access audio materials anytime and anywhere. This worksheet aligns with the curriculum, textbook, and lesson plan, while addressing the limitations of existing listening materials.

The teachers' needs analysis was conducted on October 28, 2025, through a questionnaire distributed to the Arabic language teacher of grade ten. The questionnaire used a four-point Likert scale as shown in Table 1.

Table 1. Teachers' Response Scale

Score	Interpretation
4	Strongly Agree
3	Agree
2	Less Agree
1	Disagree

Table 2. Results of Teachers' Needs Analysis

No	Assessment Aspect	Response	Score
1	Compatibility with the KSKK Arabic textbook for grade ten	Strongly Agree	4
2	Support for independent listening practice	Strongly Agree	4
3	Facilitation of Arabic listening instruction	Strongly Agree	4
4	Increasing students' motivation in learning listening skills	Agree	3
5	Availability of varied exercises and questions	Strongly Agree	4
6	Integration of <i>Text to Speech</i> audio media based on available facilities	Strongly Agree	4
7	Use of attractive visual elements to support listening learning	Strongly Agree	4
8	Gradual listening support through <i>Text to Speech</i> -based materials	Strongly Agree	4
9	Variation of listening learning activities using <i>Text to Speech</i>	Strongly Agree	4
10	Time efficiency in teaching listening through <i>Text to Speech</i> media	Strongly Agree	4
Total Score : 39			
Mean Score : 3.9			
Percentage : 97.5%			

The results indicate that 97.5% of the teacher's responses support the development of a TTS-based LKPD for listening skills. The teacher emphasizes the importance of compatibility with the existing curriculum and textbook, the integration of TTS audio, and varied exercises to support independent learning. The high agreement confirms that such a resource is critical to enhance teaching efficiency, increase student engagement, and provide structured support for listening skill development. This also demonstrates the teacher's readiness to implement TTS based materials in a classroom equipped with audio-visual facilities.

The students' needs analysis was conducted on October 28, 2025, involving 17 tenth-grade students. The questionnaire consisted of eight items related to audio clarity, repetition, learning motivation, and listening comprehension. The results are presented in Table 3.

Table 3. Results of Students' Needs Analysis

No	Assessment Aspect	Max Score	Obtained Score	Percentage
1	Facilitating understanding of listening materials	68	67	98.5%
2	Ease of use of the listening worksheet	68	63	92.64%
3	Availability of varied exercises and questions	68	66	97.05%
4	Development of listening comprehension and practice	68	66	97.05%
5	Use of <i>Text to Speech</i> for correct Arabic pronunciation models	68	67	98.5%
6	Gradual and continuous listening learning through <i>Text to Speech</i>	68	66	97.05%
7	Creating an interactive and enjoyable listening learning environment	68	64	94.11%
8	Use of attractive visual elements to increase learning motivation	68	67	98.5%
Total Score: 526				
Mean Percentage: 97%				

The findings show that 97% of students expressed a strong need for a *Text to Speech* based listening worksheet, emphasizing its role in improving comprehension, motivation, and independent learning. The analysis reveals that 97% of students expressed a need for a TTS based LKPD to facilitate listening skills. The highest-rated aspects were: Facilitating understanding of listening materials (98.5%), Providing correct Arabic pronunciation (98.5%), Use of attractive visual elements (98.5%). These results suggest that students highly value TTS-based audio for clear and repeatable listening practice. Furthermore, they require exercises that are easy to use, interactive, and varied to maintain engagement. By providing these features, the TTS based LKPD can support independent learning, increase motivation, and allow students to practice listening skills outside classroom hours, addressing the limitations of the existing textbook, which offers limited listening exercises.

The findings of this study indicate a clear mismatch between the instructional demands of Arabic listening skills and the learning resources currently available to tenth-grade students at Thawalib Gunung Padang Panjang. Data obtained from observations, questionnaires, and document analysis consistently demonstrate that listening instruction is still dominated by text-based materials with minimal audio integration. Although listening is positioned as a fundamental language skill within the KSKK curriculum of the Ministry of Religious Affairs, its practical implementation remains limited in both scope and variation. This condition reinforces the argument that instructional objectives alone are insufficient without adequate and supportive learning media.



Figure 1. TTS-based listening workset

The questionnaire results reveal strong agreement from both students and teachers regarding the need for a *Text to Speech* (TTS) based LKPD for listening instruction. A high percentage of students expressed difficulty in understanding spoken Arabic due to limited exposure to authentic and repeatable audio materials (Osman & Mahmoud, 2022; Seyidov & Çitil, 2024). This finding suggests that students require structured listening support that allows them to replay audio, control listening pace, and practice independently features that are difficult to achieve through conventional teacher-read texts.

Teachers similarly emphasized that the lack of ready to use audio resources increases instructional burden and limits classroom effectiveness. Relying solely on the teacher's voice not only causes fatigue but also introduces inconsistencies in pronunciation due to regional accents. Another critical issue highlighted by this study is the limited quantity and variation of listening exercises in Arabic textbooks and curriculum-based teaching materials. Analysis of the KSKK-referenced textbooks shows that listening activities are often repetitive, focusing primarily on simple identification tasks with little progression in difficulty. Such limitations restrict students' opportunities to develop higher-order listening skills, such as interpreting meaning, identifying implicit information, and responding to spoken texts contextually (Chiraze, 2025; Hughes & Rasulo, 2025).

Listening comprehension cannot develop effectively through isolated and monotonous exercises. Instead, learners need varied and meaningful listening tasks supported by contextual cues, visuals, and authentic audio input. The absence of these elements in existing materials further strengthens the rationale for developing a supplementary LKPD tailored specifically to listening skill development. The integration of *Text to Speech* technology into LKPD offers several pedagogical advantages that directly address the identified instructional gaps. TTS provides consistent and clear pronunciation models, enabling students to engage with standard Arabic sounds more accurately. Moreover, TTS-generated audio allows repeated exposure without additional teacher effort, supporting both classroom instruction and independent learning beyond school hours.

The availability of supporting infrastructure, such as Smart TVs and students' personal devices, further enhances the feasibility of implementing TTS-based worksheets. In this context, TTS based LKPD serves not merely as a technological addition but as a pedagogically grounded learning medium. Despite the positive reception of TTS based materials, the findings also suggest the importance of gradual familiarization and teacher guidance. Some students expressed uncertainty toward new media due to limited prior exposure, indicating that technology adoption must be accompanied by proper orientation and instructional scaffolding.

Therefore, the effectiveness of TTS based LKPD depends not only on its design but also on teachers' readiness and instructional strategies. Adequate guidance, structured implementation, and alignment with learners' characteristics are essential to ensure meaningful integration into Arabic listening instruction. Overall, the discussion highlights that the development of a TTS based listening LKPD is not simply an alternative instructional choice but a necessary response to existing limitations in Arabic listening education at Thawalib Gunung Padang Panjang. By addressing gaps in material availability, exercise variation, and audio support, such worksheets have the potential to enhance listening comprehension, increase learner motivation, and promote more student-centered learning. Thus, the needs analysis findings strongly justify further development and implementation of TTS based LKPD as an effective instructional solution for Arabic listening skills within Islamic boarding school contexts.

CONCLUSION

Based on the findings of this study, it can be concluded that the development of a *Text to Speech* (TTS) based listening worksheet (LKPD) is highly necessary and beneficial for tenth-grade students at Thawalib Gunung Padang Panjang. The needs analysis revealed significant gaps between curriculum objectives and available learning resources, with limited and less varied listening exercises in the textbook. Both teachers and students strongly support the integration of TTS technology to provide clear pronunciation models, repeated listening opportunities, interactive exercises, and visual aids. The developed TTS based LKPD addresses these gaps, promotes independent and student-centered learning, enhances listening comprehension, and aligns with curriculum standards. It is recommended that future studies evaluate the effectiveness of the TTS-based LKPD in practice, including its impact on students' listening proficiency and learning motivation over a longer instructional period.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; Investigation.

Author 3: Data curation; Investigation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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