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# Enhancing Morpho-Phonetic Listening Competence through the AIR Learning Model: A Focus on English Past Tense Inflections

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**Abstract**

This research aims to improve the listening ability of grade IX-4 students at SMP Negeri 5 Pematangsiantar, specifically in identifying regular past tense verb endings (-ed). The background of this study is the students' difficulty in distinguishing /t/, /d/, and /ɪd/ sounds. This study utilized Classroom Action Research (CAR) conducted in two cycles. The subjects were 32 students. Data were collected through listening tests and observations. The results showed a significant improvement. The mean score increased from 47.43 in the pre-test to 80.96 in the post-test of Cycle II. Furthermore, the students' passing rate improved from 16.67% to 74.07%. It is concluded that the Auditory, Intellectually, and Repetition (AIR) model is effective in enhancing students' listening skills and engagement.

**Keywords:** *Listening; Morphophonetics; Inflections; AIR; CAR.*

**Abstrak:** Penelitian ini bertujuan untuk meningkatkan kemampuan mendengarkan siswa kelas IX-4 di SMP Negeri 5 Pematangsiantar, khususnya dalam mengidentifikasi akhiran kata kerja lampau reguler (-ed). Latar belakang penelitian ini adalah kesulitan siswa dalam membedakan bunyi /t/, /d/, dan /ɪd/. Penelitian ini menggunakan Metode Penelitian Tindakan Kelas (CAR) yang dilakukan dalam dua siklus. Subjek penelitian adalah 32 siswa. Data dikumpulkan melalui tes mendengarkan dan observasi. Hasil menunjukkan peningkatan yang signifikan. Skor rata-rata meningkat dari 47,43 pada tes pra-siklus menjadi 80,96 pada tes pasca-siklus II. Selain itu, tingkat kelulusan siswa meningkat dari 16,67% menjadi 74,07%. Disimpulkan bahwa Model Auditory, Intellectually, dan Repetition (AIR) efektif dalam meningkatkan keterampilan mendengarkan dan keterlibatan siswa.

**Kata Kunci**: *Menyimak; Morfofonetik; Infleksi; AIR; PTK.*

## INTRODUCTION

Listening skill is increasingly recognized as the primary channel for language input, acting as the essential foundation for speaking, reading, and writing proficiency (Karimova M. et al., 2020). Despite its critical role, listening



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remains one of the most challenging skills for EFL learners due to the complexity of processing fleeting acoustic signals in real-time (Šafranj et al., 2024). The academic debate in listening instruction often centers on the balance between "top-down" processing (using background knowledge) and "bottom-up" processing (decoding sounds and syllables). While modern communicative approaches often emphasize top-down meaning, (Flowerdew & Miller, 2010) argue that successful comprehension is impossible without strong bottom-up skills, specifically the ability to accurately decode phonemes and grammatical markers. Without this phonological foundation, learners fail to construct accurate meaning, leading to a breakdown in communication.

A persistent phonological problem in this domain is the acquisition of the English regular past tense suffix *-ed*. Linguistically, as defined in the comprehensive grammar rules by (KERL, 2008) the realization of -ed is complex because it is governed by the phonological environment of the base verb, resulting in three distinct allomorphs: /t/, /d/, and /ɪd/.

**Table 1.** Pronunciation Patterns of -ed Endings

| /ɪd/ | Phonetic | /d/ | Phonetic | /t/ | Phonetic |
|---|---|---|---|---|---|
| Applauded | /əˈplɔːdɪd/ | Called | /kɔːld/ | Fixed | /fɪkst/ |
| Started | /ˈstɑːtɪd/ | Fined | /faɪnd/ | Kicked | /kɪkt/ |
| Wanted | /ˈwɒntɪd/ | Cleaned | /kliːnd/ | Danced | /dɑːnst/ |
| Trusted | /ˈtrʌstɪd/ | Used | /juːzd/ | Washed | /wɒʃt/ |
| Needed | /ˈniːdɪd/ | Enjoyed | /ɪnˈdʒɔɪd/ | Looked | /lʊkt/ |
| Toasted | /ˈtəʊstɪd/ | Followed | /ˈfɒləʊd/ | Helped | /helpt/ |
| Hated | /ˈheɪtɪd/ | Loved | /lʌvd/ | Laughed | /lɑːft/ |
| Painted | /ˈpeɪntɪd/ | Damaged | /ˈdæmɪdʒd/ | Watched | /wɒʧt/ |
| Treated | /ˈtriːtɪd/ | Stained | /steɪnd/ | Stopped | /stɒpt/ |
| Added | /ˈædɪd/ | Played | /pleɪd/ | Missed | /mɪst/ |

Research by (Wahyuni et al., 2021) indicates that EFL learners struggle significantly with these variations because they often cannot distinguish between voiced and voiceless triggers. This struggle often stems from cognitive overload. As explained by (García Mayo & Hidalgo, 2017), when L2 input becomes too difficult to process owing to phonological complexity, learners tend to revert to their First Language (L1) as a compensation strategy, resulting in reliance on guessing rather than accurate decoding. This difficulty is not merely a speaking issue but a profound listening barrier. As emphasized by (Annisa & Wariyati, 2023), pronunciation acts as a key attribute of fluency, where failure in this area creates a breakdown in interaction and misinterpretation of tense in spoken discourse.

However, a critical gap exists in current educational practice. Traditional listening instruction in many EFL contexts, including at SMP Negeri 5 Siantar, tends to be passive, focusing on general comprehension questions rather than explicit phonological discrimination. This tendency overlooks the conceptual shift highlighted by (Thomas, 2019), who emphasizes that listening

should not be treated merely as a receptive capability, but as a teachable skill where the instructional focus must move from the 'product' of comprehension to the 'process' of listening itself. This approach contradicts recent findings by (Fung & Lo, 2023), who argue that listening is not a passive activity, who argue that listening is not a passive activity but requires the deployment of specific cognitive and metacognitive strategies to process input effectively. They emphasize that mere exposure is insufficient because teacher input does not automatically translate into student comprehension without active internal processing. This aligns with (Khan & Khan, 2024), who assert that the effectiveness of listening instruction whether online or traditional depends not on the mode of delivery, but on how the input is pedagogically structured. Without a clear instructional design to guide processing, media consumption alone fails to build competence.

Consequently, students are rarely taught *how* to analyze these sound differences systematically. Furthermore, while previous studies have explored the general effectiveness of the Auditory, Intellectually, and Repetition (AIR) model for student engagement or general listening skills through podcasts, there is a scarcity of research applying this model specifically to remedy micro-skill deficits in phonological discrimination. Most interventions focus on broad meaning, neglecting the cognitive "inhibitory control" required to suppress incorrect sound interpretations.

Drawing on the definition by (Joyce, 2015), a model of teaching is not merely a method but a pattern used to shape the curriculum and guide instruction. Accordingly, this study proposes that the AIR model offers a theoretically sound solution to this gap by integrating three necessary components for phonological mastery. First, the Auditory stage provides the necessary comprehensive input. Second, the Intellectual stage addresses the cognitive deficit by forcing learners to engage in active analysis distinguishing constituent sound elements and relationships as defined in educational taxonomies. This analytical process is crucial for training the brain to manage linguistic interference. Third, the Repetition stage leverages the principle that language mastery requires habit formation through consistent auditory reinforcement.

The novelty of this research lies in its specific application of the AIR model to bridge the gap between general listening engagement and specific phonological competence. Unlike generic listening drills, this study positions AIR as a tool to restructure how students cognitively process grammatical sounds. The primary objective of this study is to investigate the effectiveness of the AIR learning model in improving 9th-grade students' ability to recognize and distinguish regular past tense *-ed* endings. By focusing on this specific linguistic feature, the study aims to provide empirical evidence on how structured auditory-intellectual intervention can overcome persistent phonological barriers in EFL listening.

## METHOD

### Research Design and Context

This study employed a Classroom Action Research (CAR) design. As described by (Koshy, 2012), this method is specifically designed for practitioners who wish to improve their own practice by identifying specific pedagogical problems and systematically applying reflective actions within their classrooms. The research was conducted at SMP Negeri 5 Pematangsiantar, North Sumatra. The subjects were 32 ninth-grade students (Class IX-4). This specific cohort was selected based on preliminary observations indicating a significant deficit in phonological competence, particularly in distinguishing the articulatory features of regular past tense -ed endings.

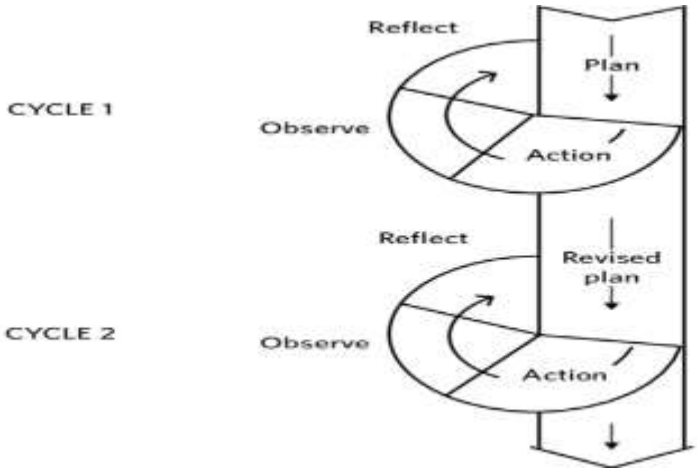


**Figure 1.** Model cycle of action research

### Data Sources and Instruments

Primary data sources for this study were the 32 students and their performance metrics. Data were collected using two main instruments: (1) Phonological Listening Test: This was the primary instrument used to measure the students' ability to decode -ed endings. To ensure data consistency, the test utilized recorded audio materials rather than live voice. According to (Creswell, 2013), the use of recorded materials is essential to maintain validity by preventing variations in tone or speed that can occur with direct teacher dictation. Furthermore, the test items were constructed based on the cognitive domains of 'Knowledge' and 'Analysis' as defined in the taxonomy by (Engelhart et al., 1984), ensuring that the assessment accurately measured the students' ability to distinguish constituent sound elements. (2) Structured Observation: Used to monitor student engagement during the learning process. (Altrichter et al., 2018) emphasize that structured observation is critical in Action Research to document the process of behavioral change and verify the impact of the intervention in real-time, moving beyond mere outcome measurement.

### Data Collection and Analytical Approach

The study was conducted in two cycles, following the planning, action, observation, and reflection phases.

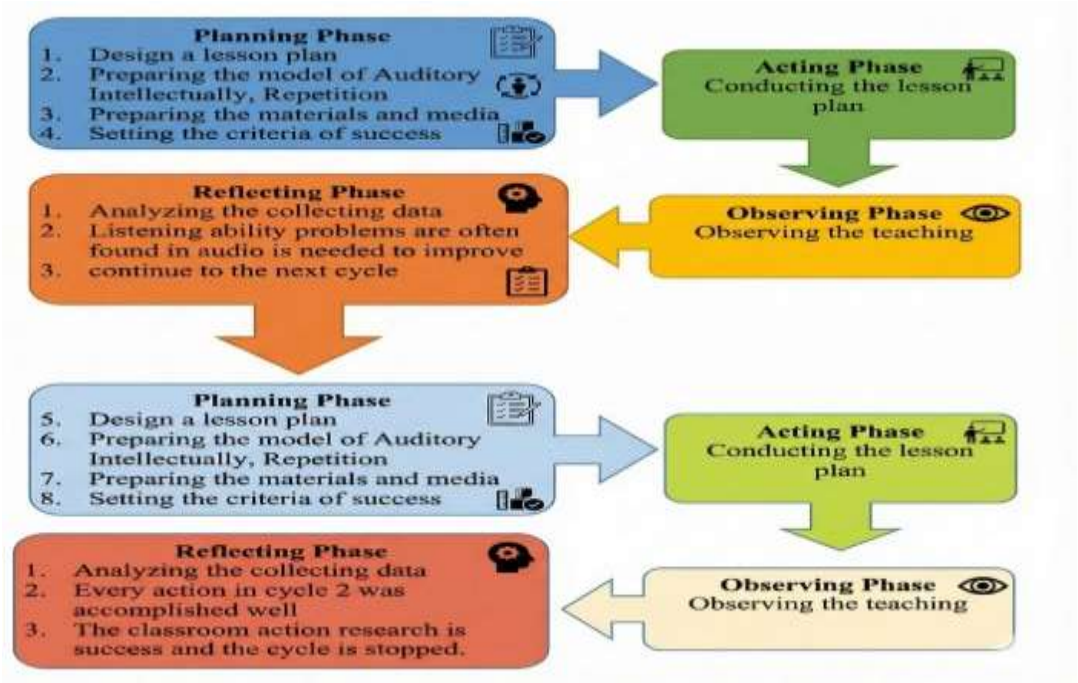


**Figure 2.** Procedures of the Research

Quantitative data from the pre-test and post-tests (Cycle I and II) were analyzed using descriptive statistics to determine the Mean Score (Mx) and Class Passing Percentage (P), adhering to the principles of language assessment and statistical calculation outlined by (Brown & Abeywickrama, 2019). Content validity was ensured by aligning test items with the English curriculum objectives for ninth-grade students. Success was defined by individual students achieving the Minimum Competency Criterion (KKM) of 75, and the classical completeness of the class reaching 75%.

Appropriateness of Methods The methodological approach was directly aligned with the research objectives. Since the study aimed to remedy a specific "bottom-up" processing deficit (sound decoding), the use of an analytical listening test focused on phoneme discrimination was more appropriate than general comprehension questions. Furthermore, the CAR design allowed for the iterative refinement of the AIR model intervention. The use of recorded audio (Auditory) and specific discrimination tasks (Intellectual) in the test instrument mirrored the instructional intervention, ensuring that the assessment validly measured the skills developed during the teaching learning process.

## RESULTS AND DISCUSSION

### Implementation of the Action Research Cycles

This study aimed to improve students' listening ability in recognizing and distinguishing the pronunciation of regular past tense verb endings (*-ed*)

through the Auditory, Intellectually, and Repetition (AIR) learning model. The findings were obtained from listening tests conducted before (pre-test) and after (post-test) the implementation of the AIR model.

The Classroom Action Research was executed in two distinct cycles to address the students' specific phonological deficits. In Cycle I, the AIR model was implemented with a primary focus on the 'Auditory' and 'Intellectual' stages to introduce the acoustic differences of -ed endings. During the *Action* and *Observation* phases of this cycle, it was noted that while students understood the concept theoretically, they still struggled to process the fleeting acoustic signals of /t/ and /d/ in real-time. This hesitation resulted in the low mean score of 47.43 observed in the pre-test data.

Based on the Reflection from Cycle I, the instructional strategy in Cycle II was refined. The researcher intensified the 'Repetition' stage, increasing the frequency of auditory drills and providing immediate corrective feedback on pronunciation errors to reinforce habit formation. This cyclic refinement moving from initial exposure in Cycle I to intensive reinforcement in Cycle II enabled students to successfully internalize the sound patterns. This procedural improvement directly correlated with the significant increase in listening accuracy presented in the subsequent data.

**Table 3.** Detailed Students' Pre-test and Post-test Scores

| No | Students Initials | Pre-test | Post-test |
|---|---|---|---|
| 1 | AV | 93 | 100 |
| 2 | AD | 45 | 83 |
| 3 | AS | 20 | 90 |
| 4 | BP | 45 | 63 |
| 5 | BS | 51 | 93 |
| 6 | CE | 45 | 93 |
| 7 | CR | 29 | 100 |
| 8 | CD | 45 | 90 |
| 9 | DZ | 25 | 85 |
| 10 | DL | 51 | 100 |
| 11 | FS | 67 | 90 |
| 12 | GG | 32 | 54 |
| 13 | GI | - | - |
| 14 | HT | 25 | - |
| 15 | IP | 54 | 93 |
| 16 | JW | 35 | 81 |
| 17 | JA | 35 | 80 |
| 18 | JP | 6 | 50 |
| 19 | LJ | 22 | - |
| 20 | MS | 45 | 61 |
| 21 | MO | 90 | 100 |
| 22 | NP | - | - |

| | | | |
|---|---|---|---|
| 23 | PM | 25 | 70 |
| 24 | RS | 38 | 75 |
| 25 | RM | 93 | 100 |
| 26 | RH | 90 | - |
| 27 | RMS | 57 | 63 |
| 28 | RD | 58 | 60 |
| 29 | SW | 32 | 81 |
| 30 | TO | 68 | 81 |
| 31 | YC | 20 | 50 |
| 32 | AM | 82 | 100 |

As shown in Table 3, there was a consistent improvement across the cohort. To provide a clearer overview of the classical achievement, the summary of statistical results is presented in Table 4.

**Table 4.** Students' Pre-test and Post-test Scores

| Test Type | Mean Score | Highest Score | Lowest Score | KKM | Pass Percentage |
|---|---|---|---|---|---|
| Pre-test | 47.43 | 93 | 6 | 75 | 16.67% |
| Post-test | 80.96 | 100 | 50 | 75 | 74.07% |

Based on Table 4, the mean score of students' listening ability increased significantly from 47.43 in the pre-test to 80.96 in the post-test. Furthermore, the percentage of students who achieved the Minimum Competency Criterion (KKM ≥ 75) improved drastically from 16.67% to 74.07%. These statistics indicate that the majority of students successfully overcame their difficulties in identifying *-ed* endings after the intervention.

## Discussion

The discussion of these findings is divided into three key aspects: the improvement of phonological competence, the mechanism of the AIR stages in facilitating learning, and the impact on student engagement.

### Improvement in Phonological Listening Competence

The primary objective of this study was to remedy the "bottom-up" processing deficit regarding -ed endings. The significant increase in the mean score (47.43 to 80.96) confirms that the AIR model is highly effective for this specific purpose. This positive trajectory resonates with (Hadijah & Shalawati, 2018), who emphasize that listening strategy instruction yields significant improvements in a Classroom Action Research setting. They note that such growth is characterized by gradual progress across cycles, where observational data is as critical as test scores in validating the effectiveness of the intervention**.** Before the intervention, students struggled to distinguish, leading to frequent misinterpretations of past tense verbs. These errors indicate that students were overwhelmed by the acoustic input. According to (García Mayo & Hidalgo, 2017), this pattern reflects a high cognitive burden where students, unable to process the target language form, fall back on L1

resources to construct meaning, leading to inaccuracy. The post-test results, however, demonstrate that structured intervention allows students to distinguish articulatory features more accurately. This finding suggests that phonological micro-skills, which are often neglected in general listening instruction, can be significantly improved through targeted auditory and intellectual training.

**The Role of AIR Stages in Phonological Acquisition**

The effectiveness of the AIR model lies in its systematic integration of three cognitive phases, which address the complexity of processing fleeting acoustic signals:

First Auditory Exposure: The initial stage provided students with repeated exposure to authentic sound inputs. This supports the view that listening is an active cognitive process where learners must consciously construct meaning. This is consistent with recent research by (Haifa et al., 2024), who reported that the AIR model effectively enhances listening skills, particularly when leveraged with audio resources to support auditory engagement. However, audio availability is not the sole determinant. As clarified by (Khan & Khan, 2024), the critical element is the instructional design that guides students to process the input, reinforcing that AIR is effective not just because of auditory repetition, but because of its structured cognitive scaffolding.

Second Intellectual Analysis: A critical success factor was the "Intellectual" stage, where students explicitly analyzed the differences among /t/, /d/, and /ɪd/ sounds. This process required students to engage in "inhibitory control," actively suppressing incorrect sound interpretations to identify the target phoneme. This "active analysis" is crucial because, as noted by (Fung & Lo, 2023), students must employ cognitive strategies to bridge the gap between auditory input and actual comprehension. This aligns with (Wigdorowitz et al., 2023), who emphasize that high-level comprehension requires the cognitive management of linguistic interference to suppress L1 intrusions.

Third Repetition and Retention: The final stage leveraged the principle of habit formation. The consistent repetition of discrimination tasks allowed students to internalize sound patterns. As supported by (Karim et al., 2024), such drilling or intensive repetition is essential for "habit formation," training the tongue and ear to automatically recognize sound patterns that do not exist in the learners' native language.

**Student Engagement and Confidence**

Beyond cognitive scores, the AIR model contributed positively to the affective domain of learning. Observations indicated a shift from passive hesitation to active participation. This behavioral transformation mirrors the

findings of (Setiawati et al., 2024), who observed that in Classroom Action Research, improvement is not just numerical but reflected in the stability of student engagement in Cycle II compared to Cycle I. They argue that as students become familiar with the intervention, anxiety decreases, leading to more consistent participation. Prior to the study, students often guessed answers due to anxiety over similar-sounding words. The structured nature of the AIR model reduced this anxiety by providing multiple opportunities for success. This finding aligns with (Sholehah et al., 2025), who noted that the AIR model contributes to a more student-centered environment where learners are not merely passive listeners but active participants engaging cognitively with the material.

## CONCLUSIONS

This study conclusively answers the research problem regarding the phonological deficit of 9th-grade students in distinguishing regular past tense *-ed* endings. The implementation of the Auditory, Intellectually, and Repetition (AIR) model proved to be a highly effective intervention, evidenced by the significant increase in the students' mean score from 47.43 in the pre-test to 80.96 in the post-test, and an improvement in the passing rate from 16.67% to 74.07%. These results indicate that the students' prior inability to distinguish /t/, /d/, and /ɪd/ sounds was not a permanent linguistic barrier, but a result of insufficient exposure and the lack of explicit phonological training.

In the context of the broader academic debate between "top-down" and "bottom-up" processing, these findings challenge the exclusive reliance on meaning-focused instruction in EFL classrooms. Instead, the results strongly support the position of who emphasize the necessity of bottom-up skills. This study confirms their theory because the data demonstrated that students failed to comprehend the past tense meaning until they explicitly mastered the micro-linguistic decoding of phonemes during the 'Intellectual' stage. This proves that without specific bottom-up intervention, general background knowledge is insufficient for accurate grammatical processing.

This study offers critical pedagogical implications regarding habit formation and student engagement. The success of the intervention implies that intensive auditory drilling is essential to internalize sound patterns that do not exist in the learners' L1. Regarding engagement, the findings align with who argue that the AIR model enhances participation. This alignment occurs because the structured repetition in this study significantly reduced the students' cognitive anxiety and fear of errors. By providing clear criteria for success through the AIR stages, students' confidence grew, leading to a shift from passive hesitation to active, voluntary participation in the classroom.

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