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FROM DECODING TO CRITICAL THINKING: DEVELOPING DIGITAL LISTENING MEDIA

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ABSTRACT

Listening comprehension in EFL contexts remains challenging due to students' difficulties in decoding spoken input, such as recognizing unfamiliar vocabulary and processing continuous speech. These issues limit both comprehension and critical thinking development. Therefore, this study aimed to develop digital learning media integrating decoding strategies to support students' listening and critical thinking skills.This research employed a Research and Development (R&D) approach using the ADDIE model, involving Analysis, Design, Development, Implementation, and Evaluation stages. The participants were 39 junior high school students. Data were collected through questionnaires, expert validation, observations, interviews, and pretest and posttest instruments. Quantitative data were analyzed using descriptive statistics and the Wilcoxon Signed Ranks Test to examine the differences between pretest and posttest scores, while other data were analyzed descriptively.The results showed that the developed media was categorized as highly feasible in terms of content, design, and usability. Students actively applied decoding strategies, such as replaying audio and segmenting sounds, and expressed positive perceptions of the media. The pretest and posttest results indicated a significant improvement in students' performance ($p < .001$). In conclusion, the digital learning media demonstrates practical potential to enhance strategic listening and promote critical thinking in EFL classrooms.

Keywords: Decoding strategies, Digital learning media, Listening comprehension, Critical thinking

A. INTRODUCTION

In the realm of English as a Foreign Language (EFL), listening serves as the primary gateway for language acquisition, as it is the fundamental medium for receiving input. This skill, however, transcends the mere perception of sound; it is a dynamic cognitive activity focused on deriving meaning. According to Trang (2020), effective listening necessitates the simultaneous integration of linguistic competence, prior knowledge, and situational indicators. Consequently, students are required to transform auditory signals into

recognizable words and interpret them within a specific framework to achieve full comprehension. The quality of listening comprehension is strongly influenced by Students' ability to decode spoken input. Moreover, Dai and Liu (2012) suggest that explicit teaching of decoding skills can help foreign language learners improve their overall listening comprehension. Consequently, shows that critical thinking helps learners understand listening materials more effectively. Instead of only using bottom-up processing (like recognizing every single word), critical thinking allows students to use logic and analysis to build a more complete understanding (Etemadfar et al., 2020). This condition shows that listening comprehension and critical thinking are not separate skills. Both depend on efficient processing of spoken language at the word and sentence levels.

However, listening is frequently regarded as a formidable challenge within the Indonesian junior high school landscape. Goh (2023) explains that this difficulty is often related to problems in processing information while listening. Building on this idea, Jia and Hew (2021) suggest that a more structured approach, such as decoding training, may help learners handle these challenges more effectively. These findings are further reinforced by the preliminary needs analysis from this research. A significant number of students expressed difficulty in identifying spoken terms and grasping new vocabulary, often needing multiple repetitions of audio tracks. Instead of employing structured processing techniques, Students frequently resorted to guessing isolated keywords. This evidence suggests that decoding hurdles are a primary barrier in listening pedagogy. Regrettably, formal instruction focused on decoding remains an overlooked element in English curricula for younger secondary Students.

The swift evolution of instructional technology provides innovative avenues to address existing pedagogical hurdles. In this context, Apsari et al., (2023) underscore that educational media serves as a vital instrument for educators in establishing more streamlined and effective learning environments. Given that Generation Z students are inherently comfortable with digital platforms, incorporating such tools is mandatory to sustain their academic engagement. Furthermore, Hidayat et al (2023) point out that mobile centric solutions, such as Android based applications, offer the versatility for students to engage with content regardless of time or location, significantly mitigating boredom while boosting intrinsic motivation. Digital platforms also facilitate recursive audio exposure and interactive elements that bolster both bottom-up and top-down cognitive processing (Yadav, 2024; Timotheou et al., 2023). When structured intentionally, these media can navigate Students from basic phonological recognition toward sophisticated skills like making inferences and information appraisal. Consequently, decoding is repositioned from an isolated drill into a fundamental precursor for high level comprehension and critical inquiry.

While existing literature has extensively explored the role of digital tools in listening pedagogy, the focus has largely remained on general score improvements or student engagement. Similarly, investigations into critical thinking within EFL settings typically prioritize oral or written tasks over listening-centered cognitive growth. Although various studies (Ardini et al., 2020; Ma'fiyah et al., 2023; Sipayung et al., 2023) confirm that digital resources enhance listening outcomes, there is still a noticeable lack of organized scaffolding for specific decoding elements, including phonetic differentiation and word boundary recognition. Furthermore, systematic Research and Development (R&D) initiatives tailored to the identified decoding requirements of junior high school students remain scarce.

Consequently, technology integrated instruction has yet to fully resolve the primary bottleneck in listening: aural decoding.

In response to these gaps, the current study adopts a Research and Development (R&D) framework utilizing the ADDIE instructional design. Following the recommendation of Hidayat et al (2023), a structured development path is vital to guarantee that the resulting digital tool is both academically valid and classroom-ready. This research specifically aims to: (1) to design and develop digital learning media integrated with decoding strategies, (2) to evaluate the appropriateness of the product through expert validation, (3) to examine its instructional effectiveness in improving students' listening comprehension and critical thinking, and (4) to explore students' learning experiences during its implementation. By centering the development on decoding strategies, this project seeks to enrich listening pedagogy and offer a context-specific instructional design for EFL Students at the secondary level.

B. METHOD

This research employs a Research and Development (R&D) framework, specifically aimed at the creation and formal validation of a digital tool that embeds decoding techniques to bolster students' critical thinking and listening mastery. Within the sphere of educational inquiry, the R&D approach is characterized as a systematic trajectory for developing, testing, and perfecting instructional materials to align with both pedagogical requirements and academic benchmarks. Furthermore, Winaryati et al (2021) emphasize that this methodology prioritizes the production of functional educational resources through continuous cycles of empirical testing and refinement.

The study involved 39 ninth-grade students from Class 9G at a public junior high school in Kabupaten Bandung Barat, Indonesia. Participants were selected using purposive convenience sampling based on accessibility, time availability, and relatively similar academic characteristics across Grade 9 classes (Ahmed, 2024; Hennink & Kaiser, 2022). In line with Apsari et al., (2023), the development process incorporated both student feedback and expert validation to ensure product relevance and usability. During the Development stage's formative evaluation, a preliminary trial with 15 students was conducted to assess the digital media's technical stability, instructional sequence, and overall clarity prior to broader use. Once revised, the final version was deployed to the entire cohort of 39 students. Following this intervention, a post-implementation survey was administered to gauge participant feedback on engagement, usability, and pedagogical support. To provide further qualitative depth, semi-structured interviews were held with five randomly selected students to investigate their personal learning journeys and reactions to the embedded decoding techniques.

This study utilized the ADDIE framework encompassing Analysis, Design, Development, Implementation, and Evaluation (Reinbold, 2013) as its primary developmental roadmap. While these stages are typically depicted in a linear sequence, they were executed with a degree of flexibility in this project. Iterative revisions were triggered by expert feedback and student input during the trial iterations. As highlighted by Hidayat et al. (2023), such a rigorous developmental trajectory is essential to guarantee that the final digital output is both theoretically robust and practically viable for classroom environments. Consequently, each ADDIE phase was strategically mapped to the study's core objectives: media construction,

expert-based suitability assessment, effectiveness testing for listening and critical thinking, and the investigation of Student experiences during active use.

Figure 1. ADDIE Models

Analysis

The initial phase of the research focused on identifying specific auditory hurdles, student learning preferences, and the particular challenges associated with decoding oral English. To gather this data, a comprehensive needs assessment questionnaire was administered alongside preliminary classroom observations. The data indicated persistent obstacles in phonetic word recognition, the processing of novel vocabulary, and the ability to keep pace with natural speech rates. These insights were instrumental in defining the pedagogical goals of the project and served as a direct blueprint for embedding systematic decoding strategies within the digital media's design.

Design

Based on the identified needs, a blueprint of the digital learning media was developed. The design included structured listening sequences and decoding focused activities (e.g., on sounds, word recognition, word boundaries, and common pronunciation patterns), enabling Students to transform spoken input into meaningful words. These bottom-up activities were systematically integrated before students engaged in higher level listening comprehension and critical thinking tasks.

The design draft was evaluated by three expert validators using a validation instrument assessing content relevance, instructional clarity, language appropriateness, and media presentation. Feedback from validators was used to refine the design before development.

Development

During the development phase, the digital learning media was created according to the design that had previously been validated by experts. The content included recorded audio materials, interactive listening tasks, and decoding-focused exercises that were designed to support students in processing spoken English more effectively. After receiving feedback from the validators, several parts of the media were revised, especially those related to the clarity of instructions, the organization of activities, and minor technical issues to ensure smoother use in the classroom.

During this stage, a preliminary pilot study was conducted involving a subgroup of 15 students from the larger cohort of 39. The primary objective of this small-scale trial was to determine the suitability and readiness of the instructional tool for authentic classroom environments. Upon concluding the session, participants provided feedback through a structured survey designed to assess the media's usability, pedagogical engagement, and the clarity of its instructional components. These survey insights were subsequently cross-referenced with the findings from expert evaluations. Drawing on this comparative analysis, final refinements were implemented to elevate the media's quality prior to its full-scale deployment.

Implementation

The implementation phase was integrated into the existing English curriculum, adhering strictly to the school's established instructional timetable. This stage involved the entire cohort of 39 students over the course of five sessions, with each session comprising two 40 Minute instructional periods. To establish a baseline for comparison, a pretest was administered at the onset of the study to evaluate the students' initial critical thinking and listening proficiency. Throughout the subsequent five meetings, the refined digital learning tool was systematically incorporated into the classroom activities. Upon completion of these sessions, a posttest was conducted to quantify the students' academic advancement.

To complement these quantitative findings, a post intervention survey was distributed to capture the students' firsthand experiences with the digital media. Furthermore, five randomly selected participants took part in semi structured interviews to provide qualitative depth regarding their satisfaction and learning journeys. Collectively, the data derived from these tests, surveys, and interviews formed the empirical basis for assessing the implementation's success and refining the digital tool for future pedagogical use.

Evaluation

The final evaluation phase was designed to measure both the instructional efficacy and the feasibility of the developed product. Quantitative assessment was focused on comparing pretest and posttest results through SPSS software to identify statistically significant gains in students' critical thinking and listening mastery. Meanwhile, other data streams including classroom observations, survey results, and interview transcripts underwent descriptive analysis focusing on frequency distributions, percentages, and predominant response trends. Qualitative insights were further scrutinized to detect recurring themes regarding student engagement, their perceptions of the tool, and how they applied the embedded decoding strategies. By synthesizing the statistical outcomes with descriptive trends, the research achieved a holistic appraisal of the digital media's impact and effectiveness.

The research instruments included a needs analysis questionnaire designed to identify students' listening difficulties and learning needs prior to the intervention. An expert validation sheet was used by three experts to assess the instructional quality, content relevance, language clarity, and media design of the developed product. Listening comprehension and critical thinking tests were administered before and after the intervention to measure learning gains. Classroom observation was conducted using an observation checklist to document student engagement and strategy use during learning activities. A post-intervention questionnaire was used to capture students' perceptions of usability, engagement, and instructional support. Finally, semi-structured interviews were conducted with selected students to gain in-depth qualitative insights into their learning experiences, challenges, and perceived impact of the digital media on their listening and critical thinking development.

The data were analyzed using both quantitative and qualitative techniques to obtain a comprehensive understanding of the research findings. Quantitative data from the needs analysis questionnaire, expert validation sheet, post-intervention questionnaire, and pretest–posttest scores were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation), while inferential analysis using the Wilcoxon Signed-Rank Test in SPSS was applied to examine differences in students' listening comprehension and critical thinking before and after the intervention. Qualitative data from classroom observations and semi-structured interviews were analyzed thematically by identifying, coding, and grouping emerging patterns related to student engagement, decoding strategy use, and learning experiences.

C. FINDINGS AND DISCUSSION

The subsequent section details the research findings and comprehensive discussion, structured in alignment with the ADDIE developmental phases. The presentation follows the progression from the initial Analysis of student needs, through the Design and Development validation by experts, to the observations during Implementation, and ultimately concluding with the Evaluation of the intervention's outcomes.

1. Needs Analysis Questionnaire (Analysis Phase)

The needs analysis questionnaire was distributed to 39 students to explore their initial difficulties in listening and their expectations before the digital learning media was developed. This stage was part of the Analysis phase in the R&D process using the ADDIE model, aiming to ensure that the product was grounded in actual classroom needs. The findings from the needs analysis questionnaire are summarized in the following table, which presents students' primary listening difficulties, learning preferences, and their implications for the development of the digital learning media.

Table 1. Summary Students needs analysis

Aspect	Key Findings	(n)	(%)	Implication for Media Development
Listening comprehension difficulties	recognizing unfamiliar vocabulary and processing spoken texts	24	61.5	Learning media should support vocabulary recognition and spoken text processing
Perception of audio media	helpful for maintaining focus during listening activities	34	87.1	Audio-based learning should be a core component of the media
Need for decoding strategies	Students require strategies to infer meaning of unfamiliar words from context	36	92.3	Decoding strategies must be explicitly integrated into listening activities
Critical thinking in listening	Students believe digital learning media can enhance critical thinking in listening	30	76.9	Media should include tasks that promote analysis, evaluation, and reflection

The results show that 24 students (61.5%) admitted having difficulty recognizing unfamiliar vocabulary and processing spoken texts. This means that more than half of the participants struggled at the early stage of listening, especially in identifying words from continuous speech. These responses point to problems at the decoding level, where students find it challenging to transform sound input into meaningful lexical units. Regarding learning preferences, 34 students (87.1%) stated that audio-based materials helped them stay focused during listening activities. This high percentage indicates that students still rely heavily on audio input as the main source of learning in listening classes. It also suggests that audio should remain a central element in the instructional design.

Furthermore, a vast majority of the participants specifically 36 students (92.3%) identified a critical requirement for explicit techniques to deduce the meaning of unfamiliar terms through contextual clues. This figure represents the highest percentage across all surveyed indicators, underscoring a widespread awareness among Students of their own linguistic boundaries and a corresponding desire for systematic vocabulary-processing guidance. This evidence reinforces the premise that decoding centered strategies must be an integral, explicit component of listening pedagogy. Regarding more complex cognitive goals, 30 students (76.9%) expressed confidence that digital instructional tools could facilitate the growth of critical thinking within listening tasks. While this proportion is marginally lower than other surveyed areas, it nonetheless signifies a robust expectation that auditory training should transcend basic factual recall and incorporate more evaluative and reflective elements.

The needs analysis revealed that many students had difficulty recognizing unfamiliar words and understanding spoken texts delivered in continuous speech. More than half of the students admitted that they often failed to catch words clearly at the beginning of listening activities. This means the problem was not only about understanding the overall meaning, but also about processing sounds into recognizable words. In simple terms, students struggled at the decoding level. These circumstances reinforce the premise that listening proficiency extends far beyond the mere ability to answer factual questions. As Trang (2020)

argues, effective listening necessitates a seamless integration of auditory recognition and the active construction of meaning. When Students struggle with precise word identification, their capacity to synthesize the overall message is significantly hindered. This is consistent with Goh (2023) observation that disruptions in phonological recognition can act as a bottleneck for comprehensive understanding. Furthermore, Apsari et al., (2023) highlight that suboptimal instructional tools may stifle student advancement. The evidence gathered in this research mirrors these theoretical concerns, particularly within the specific developmental context of lower secondary school students.

Based on these classroom realities, the design of the media did not only add more questions. Instead, it provided structured decoding support. Features such as replay buttons, guided word segmentation, and sound-focused tasks were intentionally included to help students pay closer attention to spoken input. Students had previously expressed that they needed clearer strategies to deal with unfamiliar vocabulary, so the design decision was directly based on their responses, not assumptions. In summary, these analytical insights served as the foundational pillars for the subsequent Design and Development phases. Consequently, the digital instructional media was engineered to: (1) offer scaffolding for lexical recognition and the processing of oral discourse, (2) establish auditory input as the primary instructional element, (3) systematically embed decoding techniques within every listening activity, and (4) incorporate tasks that prompt Students to perform analytical and reflective evaluation of the audio content.

Design Phase

During the design phase, the data from student needs assessments and initial classroom observations were synthesized into a cohesive instructional blueprint. The preliminary findings highlighted several pedagogical challenges, including low student engagement, difficulties in deciphering spoken discourse, underutilization of decoding techniques, and poor performance in inference based assessments. These issues served as the primary catalyst for the digital media's conceptual design. Adhering to the ADDIE based Research and Development (R&D) framework, this stage was pivotal in ensuring the product remained both theoretically grounded and practically aligned with the classroom's empirical realities.

The pedagogical objectives were carefully mapped to the metrics used in the pre-test and post-test. The media was engineered to facilitate the identification of core ideas, the extraction of specific details, and the formulation of logical inferences. This was achieved by integrating decoding strategies such as keyword recognition, phonological boundary detection, and phonetic pattern discrimination directly into the learning flow. To operationalize these goals, six distinct audio modules were developed as the intervention’s core. Four of these modules featured narrative discourses acting as the primary linguistic input, each accompanied by comprehension drills, decoding focused exercises, and critical inquiry tasks. To enhance relatability and student interest, topics were meticulously selected from the Students' everyday contexts.

In addition to narrative content, the design incorporated targeted exercises such as missing word activities and dictation tasks to bolster auditory precision at the lexical level. The gap filling components required students to isolate specific terms within continuous speech, thereby bridging the gap between spoken and written forms. Simultaneously, the dictation exercises were intended to sharpen phonological awareness and the ability to differentiate similar acoustic patterns. These tasks provided the necessary bottom-up processing

foundation before advancing to higher order reasoning. Each unit followed a systematic sequence, progressing from vocabulary acquisition and general gist to detailed analysis and evaluative questioning. This structure ensured that instruction remained perfectly aligned with the assessment framework.

Figure 2. Flowchart Digital Media Design

As this research was conducted as a pure R&D study, statistical analysis using SPSS was applied only to the pre-test and post-test scores to examine the effectiveness of the developed media. Other instruments, such as questionnaires, expert validation sheets, observation checklists, and interview data, were analyzed descriptively by looking at general patterns and tendencies in the responses. These data were mainly used to revise and improve the product during the development process. By combining descriptive evaluation for product refinement and statistical analysis for effectiveness measurement, the study maintained methodological consistency within the ADDIE framework.

Development phase

Following the analysis and Design phase, which involved students' needs analysis, classroom observation (pre implementation), the development phase focused on producing and refining the Google Site based digital learning media. At this stage, the preliminary product was developed based on the instructional flowchart and design blueprint, and subsequently subjected to expert validation to ensure its feasibility prior to classroom implementation. The outcomes of the expert validation process confirmed that the instructional media satisfied both pedagogical standards and technical requirements. The developed tool achieved a "Highly Feasible" status, with particularly strong performance in content alignment and functional usability. This evaluative milestone was critical as, according to Hidayat et al. (2023), a digital educational resource must undergo rigorous theoretical and practical verification prior to classroom integration. Feedback provided by the validation panel specifically concerning the precision of instructional cues and the mechanism of student feedback was instrumental in refining the final iteration. Consequently, this iterative refinement process substantially enhanced the media's overall quality and readiness for the implementation phase. The following are the displays of the digital learning media that has been developed and validated by experts.

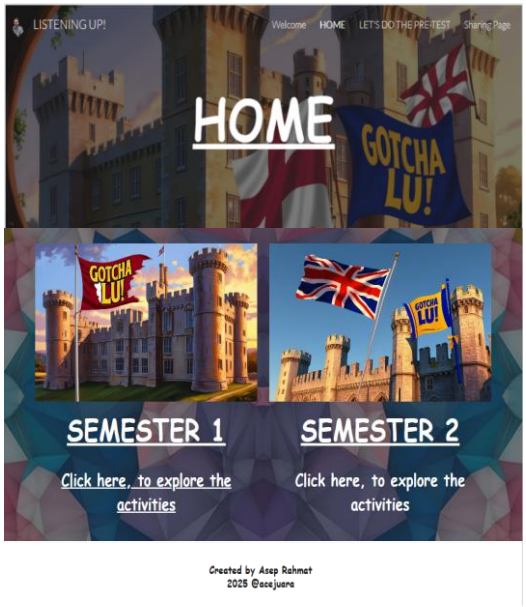

Figure 3. Home Page

Figure 4. Learning Chapter Page

Implementation Phase

After the limited trial showed satisfactory results, the study moved to the wider implementation stage. In this phase, the developed digital learning media was applied in a real classroom setting involving 39 ninth grade students as the target group. The focus at this stage was not only on practicality but also on collecting comprehensive data to examine the effectiveness of the product within the ADDIE framework.

The implementation began with a pretest to identify students' initial listening comprehension. The treatment was then conducted over five meetings (5 × 2 lesson periods, 40 minutes each). During these sessions, listening activities were delivered using the developed media, which integrated decoding strategies such as identifying keywords, recognizing word boundaries, paying attention to pronunciation patterns, and replaying audio to strengthen understanding. Classroom observations were carried out throughout the process to document how students engaged with the media, applied decoding strategies, and demonstrated listening comprehension and emerging critical thinking skills. These observations were intended to describe the learning process rather than to produce statistical data.

Following the intervention, a posttest was conducted to quantify the academic progress achieved through the use of the digital media. The comparative data between pretest and posttest results were subsequently subjected to statistical analysis using SPSS within the evaluation framework. Furthermore, a comprehensive perception survey was administered to the entire cohort to capture their individual learning journeys and feedback. To provide qualitative depth to these findings, five students were randomly invited to participate in follow up interviews. The synthesis of these quantitative and qualitative outcomes is detailed in the evaluation section, where statistical performance is juxtaposed with the thematic analysis of observational records, survey responses, and interview transcripts to identify consistent learning patterns.

The quantitative results obtained during the implementation phase are presented in the following tables, including descriptive statistics, normality test results, and the Wilcoxon Signed-Rank Test, which collectively illustrate students' pre-intervention and post-intervention performance in listening comprehension and critical thinking.

Table 2. Descriptive Statistics of Pretest and Posttest Scores

			Statistic	Std. Error
Pre-Test	Mean		48.21	3.157
	95% Confidence Interval for Mean	Lower Bound	41.81	
		Upper Bound	54.60	
	5% Trimmed Mean		47.45	
	Median		40.00	
	Variance		388.799	
	Std. Deviation		19.718	
	Minimum		20	
	Maximum		90	
	Range		70	
	Interquartile Range		30	
	Skewness		.806	.378
	Kurtosis		-.307	.741
Post-Test	Mean		66.41	3.234
	95% Confidence Interval for Mean	Lower Bound	59.86	
		Upper Bound	72.96	
	5% Trimmed Mean		66.85	
	Median		70.00	
	Variance		407.827	
	Std. Deviation		20.195	
	Minimum		20	
	Maximum		100	
	Range		80	
	Interquartile Range		30	
	Skewness		-.146	.378
	Kurtosis		-.648	.741

Table 3. Normality Test Results

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-Test	.225	39	.000	.890	39	.001
Post-Test	.134	39	.075	.960	39	.172

Table 4. Wilcoxon Signed Ranks Test Results

Ranks

		N	Mean Rank	Sum of Ranks
Pre-Test - Post-Test	Negative Ranks	32[a]	17.66	565.00
	Positive Ranks	2[b]	15.00	30.00
	Ties	5[c]		
	Total	39		

Test Statistics[a]

	Pre-Test - Post-Test
Z	-4.616[b]
Asymp. Sig. (2-tailed)	.000

While the core trajectory of this research remained centered on product development via the ADDIE model, the implementation phase included rigorous testing to evaluate preliminary instructional impact. Performance metrics indicated a notable upward shift in student achievement, with the average score rising from 48.21 (SD = 19.72) at the baseline to 66.41 (SD = 20.20) following the intervention. Given that the dataset deviated from a normal distribution, the non-parametric Wilcoxon Signed Ranks Test was utilized for analysis. The results confirmed a statistically significant improvement in listening and critical thinking proficiencies ($Z = -4.62$, $p < .001$), suggesting that the observed gains were not incidental. However, as this was an R&D study without a control group, the findings cannot be interpreted as causal evidence. Rather, the results provide preliminary empirical support that the developed media functioned as intended and demonstrated instructional potential in supporting listening comprehension and critical thinking.

During classroom implementation, students did not appear passive. Observations showed that many of them replayed the audio, paused at difficult parts, and tried to separate unfamiliar words into smaller sound units. These actions indicate that students were actively applying decoding strategies. Leonard (2019) underlines the importance of recognizing word boundaries in second language listening, while Jose (2023) explains that bottom-up activities can sharpen attention to pronunciation details. What happened in the classroom reflected these principles. The media did not only provide audio, but also guided students to use it more strategically.

Evaluation Phase

In alignment with the ADDIE framework, the evaluation phase served as the final assessment to scrutinize the overall viability, quality, and pedagogical efficacy of the digital instructional tool. This stage was executed following the full scale implementation to ascertain if the media successfully met the pre defined learning goals and mitigated Students'

auditory challenges via decoding techniques. Quantitative evidence was derived from the pretest and posttest scores to evaluate advancements in students' listening mastery. These datasets were processed through SPSS software, utilizing the Wilcoxon Signed Ranks Test to determine the statistical significance of any observed improvements. This nonparametric analysis ensured that the changes in student performance were not due to chance, but rather a reflection of the intervention's impact. Meanwhile, qualitative data were collected through classroom observations, post implementation questionnaires, expert validation sheets, and interviews. These data were analyzed using trend-based analysis to identify students' response tendencies, engagement, practicality of the media, and the support for critical thinking during listening activities.

Table 5. Students' Responses on Digital Learning Media

Aspect	Focus Indicator	Frequency (Students)	(%)
Media Usability	Ease of use and navigation buttons	36	92.3%
Instruction Clarity	Clarity of instructions and guidance	34	87.2%
Visual Design	Text, color, layout, and images	38	97.4%
Audio Quality	Audio clarity and listening support	35	89.7%
Content Organization	Material structure and relevance	34	87.2%
Decoding Strategies Application	Guessing meaning through sounds, word segmentation, replay use	37	94.9%
Critical Thinking Development	Prediction, reasoning, expressing opinions	33	84.6%
Learning Motivation	Enjoyment and willingness to reuse the media	36	92.3%
Overall Media Feasibility	General usefulness of the media	38	97.4%

Qualitative insights gathered from semi structured interviews with five randomly selected participants revealed a favorable reception of the digital instructional tool. A unanimous consensus among the interviewees highlighted the platform's user friendliness, with the majority particularly emphasizing the vibrant and aesthetically engaging interface. While a few participants noted isolated technical glitches, these occurrences were reported as minor and did not substantively detract from the overall pedagogical experience or student engagement.

In terms of listening comprehension, most students perceived the audio as clear and helpful. Exercises such as dictation and contextual questions supported their understanding of spoken texts and encouraged them to think before answering. All students confirmed that they actively applied decoding strategies, including replaying the audio, focusing on pronunciation, identifying key words, and guessing meaning from context. These responses indicate a tendency toward more strategic listening behavior. Additionally, students reported that reflective and inference-based questions encouraged deeper thinking. They mentioned distinguishing facts from opinions and identifying implied information. Overall, the findings suggest that the media supported students' engagement, listening comprehension, and perceived development of critical thinking.

Students' questionnaire responses also strengthen this interpretation. Most students rated the media positively in terms of design, clarity, and usefulness. Many of them agreed that the media helped them replay audio, identify key words, and pay attention to word boundaries. This indicates that decoding strategies were not only included in the design but were actually applied during learning. Jia and Hew (2021) argue that listening development improves

when Students actively engage with phonological details. The responses in this study suggest that such engagement occurred. Students also mentioned that some tasks required them to predict, analyze, and justify answers. These activities align with the findings of Wale and Bishaw (2020), who suggest that critical thinking is characterized by the application of reasoning, analysis, and evaluation. Although this study did not employ a separate standardized instrument to measure critical thinking, the qualitative feedback suggests that students moved beyond simple recall toward more complex cognitive involvement.

The interview data provide deeper insight into students' experiences. Some students explained how they broke down difficult words, connected sounds with written forms, and reviewed their mistakes after checking answers. This shows that decoding strategies were used flexibly, not mechanically. At the same time, students reported challenges such as fast speech and unfamiliar vocabulary. These comments are valuable for future revisions, especially in improving audio clarity and pacing.Overall, this study demonstrates that a carefully developed digital learning media, grounded in real classroom needs, can support more strategic listening practices among junior high school EFL Students. While further research with broader designs is still needed, the integration of decoding strategies within digital media appears to be pedagogically meaningful and practically applicable in this setting.

D. CONCLUSION

This study developed and evaluated a digital learning media integrated with decoding strategies for lower secondary EFL students using the ADDIE framework. The development process was guided by systematic stages of analysis, design, development, implementation, and evaluation, which were informed by multiple data sources, including students' needs analysis, expert validation, classroom observations, and assessment results. The initial analysis revealed that students experienced difficulties in lexical recognition and in processing spoken English, which informed the integration of structured decoding support within the learning media. The findings indicate that the developed media was highly feasible based on expert validation and was effectively implemented in the classroom. Classroom observations showed active student engagement and consistent use of decoding strategies during listening activities. In addition, statistical analysis of pretest and posttest results revealed a significant improvement in students' listening comprehension and critical thinking skills after the intervention. Students also reported positive perceptions of the media in terms of usability, visual design, and learning support, suggesting that the digital tool contributed to a more engaging and structured learning experience.

The study demonstrates that integrating decoding strategies into digital learning media can effectively support listening comprehension and promote critical thinking in EFL classrooms. The findings confirm that the developed product is not only valid and practical but also beneficial for instructional use in real classroom settings. However, the study is limited by the absence of a control group and a relatively small sample size, which restricts the generalizability of the findings and limits causal interpretation. Future research is recommended to employ experimental or quasi-experimental designs with larger and more diverse participants to further examine the effectiveness and long-term impact of decoding-based digital learning media across different educational contexts.

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