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ENHANCING CRITICAL THINKING THROUGH THE DEVELOPMENT OF A CRITICAL LISTENING TEACHING MODEL WITH STUDENTS' SELF-MEDIATED PODCAST: AN EXPERIMENTAL STUDY

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Abstract: The study aimed to examine whether there is a significant difference in students' critical thinking skills before and after the implementation of a self-mediated podcast model in a critical listening class to improve critical thinking. Using a mixed-methods, quasi-experimental design, the study involved 67 fourth-semester English Education students at Universitas Negeri Semarang. The experimental group used the ARRRIPS (Analyze, Review, Revise, Record, Immediately Podcast, and Share) model while the control group received conventional instruction. Results analyzed through paired sample and independent t-tests demonstrated a statistically significant improvement in the experimental group's critical thinking skills ($p < 0.001$). The findings suggest that the integration of self-mediated podcasting effectively enhances students' critical thinking.
Keywords: *critical listening; self-mediated podcast; critical thinking; efl; arrrips model; merdeka curriculum.*

INTRODUCTION

The rapid transition to hybrid and online learning in the wake of the COVID-19 pandemic profoundly reshaped higher education worldwide (Munteanu, 2025), with English language instruction being among the most affected domains. As campuses shut down, students were thrust into online learning environments often lacking in interpersonal communication and collaborative engagement (Mojtahedzadeh et al., 2024). This sudden shift challenged learners' abilities to engage in dynamic, real-time conversations, ultimately leading to diminished competencies in key areas such as listening comprehension, oral communication, and critical thinking (Tauchid, et.al, 2024). This impact was particularly visible in critical listening courses, where students struggled not only with decoding spoken input but also with evaluating arguments, identifying speaker bias, and articulating nuanced responses (Alharbi & Al-Ahdal, 2024). These difficulties underline the need for pedagogical innovation that promotes higher-order thinking and deeper engagement with spoken texts.

Amidst these challenges, the post-pandemic era has also seen the widespread adoption of digital learning tools, including mobile devices, multimedia platforms, and asynchronous audio-based media such as podcasts (Sahasrabudhe, et.al, 2025). These technologies have transformed learning into more student-centered, flexible experiences (Kerimbayev, et.al, 2023; Alam, 2023). Podcasts, in particular, have emerged as versatile tools that offer learners authentic,

engaging content while also serving as platforms for creative expression. They empower students not only to consume knowledge but also to produce and share it, fostering critical thinking, autonomy, and reflection (Gast & Shifrin, 2024; Waldron, Covington, & Palmer, 2025). This approach aligns with the principles of critical pedagogy, which emphasize learner agency, participatory media, and critical engagement with content (Jorgensen, 2023; Fox & Murphy, 2024; Gill & Stewart, 2024).

Despite the growing potential of podcasts and other digital media (Mutmainna, 2025), many English language curricula at the tertiary level remain entrenched in traditional, teacher-centered methods. These approaches often emphasize rote learning and passive reception of information (Javed, 2023), with limited integration of technology that fosters active learning, reflection, or problem-solving (Dzaiy & Abdullah, 2024). Consequently, students lack opportunities to practice skills such as analysis, synthesis, and evaluation (Bagheri, & East, 2023)—key dimensions of critical thinking (Baki, 2025). While some research highlights the benefits of podcasts in language education, most studies focus on their effects on listening (Paulinsyah, et.al, 2024; Axororova, 2025; Andriawan, 2024) or speaking proficiency (Lutfa, et.al, 2024) with limited attention paid to their critical thinking.

This study addresses that research gap by examining the effect of a structured, technology-integrated instructional framework—the ARRRIPS model—on students' critical thinking development. The ARRRIPS model stands for Analyse, Review, Revise, Record, Immediate Podcasting, and Share, guiding learners through a reflective, iterative process of podcast creation (Boehm, 2025). Unlike conventional methods, this model not only enhances students' engagement with content but also positions them as producers of knowledge, enabling them to articulate their ideas, challenge perspectives, and evaluate spoken discourse. Through this model, students actively participate in their learning journey, leveraging digital media to express, reflect, and revise their understanding.

Accordingly, the research question guiding this study is: Is there a significant difference in students' critical thinking abilities before and after the implementation of the self-mediated podcast-based ARRRIPS model?

The novelty of this study lies in its integration of podcast-based learning with a structured instructional model designed to promote critical listening and thinking—an area still underexplored in the context of EFL higher education. While prior studies have focused on language acquisition, few have explored how podcasts, when purposefully designed and integrated, can function as pedagogical tools for cultivating higher-order thinking skills.

This study is grounded in the theoretical frameworks of constructivism (Alam, 2023) and task-based learning (Luo, 2024), both of which emphasize learner autonomy, engagement, and real-world problem-solving. By operationalizing these theories through the ARRRIPS model, the study offers a scalable, innovative solution that promotes critical thinking and digital literacy.

The significance of this study is twofold: pedagogically, it offers a replicable model for integrating technology into EFL instruction that fosters critical engagement and learner agency; theoretically, it contributes to the discourse on podcast-based learning (Kobilova & Azimjonova, 2024; Boehm, et.al 2025) by bridging it with cognitive and pedagogical models of critical thinking. The findings are expected to inform curriculum designers, educators, and policymakers seeking to modernize language instruction and better prepare students for the demands of the 21st-century global landscape.

METHOD

This research employed a mixed-methods, quasi-experimental design, which combines both quantitative and qualitative approaches (Creswell & Plano Clark, 2018) to provide a comprehensive evaluation of the impact of the ARRRIPS model. The study utilized the ADDIE development model framework, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation (Nurhayati, et.al, 2024).

In the Analysis phase, researchers conducted a needs analysis through interviews, observations, and questionnaires (Ramadhana, 2024) to diagnose the existing challenges in critical listening and thinking faced by the students. The analysis identified that students lacked metacognitive strategies and authentic tasks that foster higher-order thinking. In the Design phase, the ARRRIPS model was carefully structured to include six stages: Analyze, Review, Revise, Record, Immediately Podcast, and Share. Each stage was aligned with critical thinking indicators to scaffold students' learning experiences. Detailed lesson plans, materials, podcasting guidelines, and assessment instruments were developed. The Development phase included the

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creation of learning materials such as podcast script templates, rubrics for evaluating critical thinking (Slamet, et.al, 2024), audio recording instructions, and reflection journals. The instruments were validated by a panel of experts in English language teaching, educational technology, and assessment to ensure content validity and reliability.

This study employed a quasi-experimental design, specifically the Non-Equivalent Control Group Design, to examine the effectiveness of the Self-Mediated Podcast model in enhancing students' critical thinking skills in a Critical Listening course. This design was selected due to the practical limitations in assigning participants randomly, which is often the case in educational settings where existing classroom groups are used.

The key feature of this design is the use of two intact groups—an experimental group and a control group—that are not randomly assigned but are assumed to be comparable based on pretest performance and instructional context. The study was conducted with two groups of fourth-semester students enrolled in the English Department at Universitas Negeri Semarang (UNNES). The experimental group consisted of 34 students, while the control group comprised 33 students. Prior to the intervention, both groups were given a pretest to assess their baseline critical thinking skills, particularly within the domain of critical listening.

The experimental group underwent a treatment phase that involved the implementation of a Self-Mediated Podcast learning model. This instructional approach integrated podcast-based learning activities structured around the ARRRIPS model—Analyze, Review, Revise, Record, Immediately Podcast, and Share. The model was specifically designed to promote critical thinking skills and encourage students to engage in reflective listening practices (Bagheri, & East, 2023). In contrast, the control group received conventional listening instruction. This consisted of lecturer-led sessions using a printed module as the primary learning material (Hijrah & Hafid, 2024), without the incorporation of any podcast-related or self-mediated digital learning components.

Following the instructional period, a posttest was administered to both the experimental and control groups. This was done to evaluate the extent of improvement in students' critical thinking abilities and to determine the effectiveness of the Self-Mediated Podcast model in comparison to traditional teaching methods. The research design was presented in Table 1 below.

Table 1. *The research design in each group*

Group	Pre-test	Treatment	Post-test
Experiment	E1	X (Self-Mediated Podcast)	E2
Control	C1	Y (Module-supported Listening)	C2

Explanation:
E1, E2: Pretest and posttest results for the experimental group
C1, C2: Pretest and posttest results for the control group
X: Treatment using the Self-Mediated Podcast learning model
Y: Instruction using conventional listening materials supported by a printed module

In the Implementation phase, the study was conducted with 67 fourth-semester English Education students at Universitas Negeri Semarang. The participants were assigned into two groups: the experimental group (34 students) who received instruction using the ARRRIPS self-mediated podcast model, and the control group (33 students) who received conventional instruction using module books. The intervention lasted for 12 weeks, during which the experimental group created self-mediated podcasts as part of their learning activities, while the control group followed standard critical listening exercises. During the evaluation phase, both groups completed pre-tests and post-tests using validated critical thinking instruments. The tests assessed five core indicators of critical thinking (Wagner, 2021): interpretation, analysis, evaluation, inference, and explanation/reflection. The scoring rubric ranged from 0 to 100, categorizing performance into five levels: Very Low, Low, Moderate, High, and Very High.

Quantitative data were analyzed using SPSS version 25. Paired sample t-tests were conducted to assess the within-group differences (pre-test and post-test comparisons), while independent sample t-tests were used to compare the post-test scores between the experimental and control groups. Normality and homogeneity tests (Shapiro-Wilk and Levene's Test) were

performed to ensure that the assumptions for parametric testing were met.

In addition to quantitative data, qualitative data were collected through student reflection journals, interviews, and classroom observations. These data provided deeper insights into students' experiences, engagement, and the cognitive processes they employed during the podcast creation activities. This robust mixed-methods approach allowed for a comprehensive evaluation of the ARRRIPS model's effectiveness in enhancing students' critical thinking skills in an EFL context.

RESULTS AND DISCUSSION

To evaluate the effectiveness of the ARRRIPS podcast-based instructional model in enhancing the students' critical thinking skills in a critical listening class, a quasi-experimental design was employed. This design included two intact groups—an experimental group (n=34), which received instruction using the ARRRIPS model, and a control group, which was taught using conventional instructional model. Both groups completed a pre-test and post-test based on a validated critical thinking test adopted by Facione's (1990) eight critical thinking components. Based on this objective, the study formulated the following H_a Hypothesis) 'There is a significant effect of the podcast-based instructional model on improving the students' critical thinking skills in the Critical Listening course'.

As shown in Table 4.16. the control group recorded a pre-test mean score of 67.24, which improved to 75.21 in the post-test, yielding a mean gain of 7.97 points. The experimental group, which was exposed to the ARRRIPS model, began with a slightly higher pre-test mean of 72.97 and improved to 88.56 on the post-test, resulting in a mean gain of 15.59 points.

Table 2. *Descriptive statistics*

Group	Pretest Mean	Posttest Mean	Mean Gain
Control	67.24	75.21	+7.97
Experiment	72.97	88.56	+15.59

Both groups improved from pretest to posttest, but the experimental group showed a larger gain in critical thinking scores compared to the control group. This suggests a stronger effect from the intervention. The descriptive data strongly indicate that the ARRRIPS podcast-based instructional model contributed to a significantly greater improvement in critical thinking skills. The mean gain of 15.59 points in the experimental group compared to 7.97 in the control group suggests that the ARRRIPS intervention had a substantially positive impact. This result justifies proceeding with formal inferential statistical testing to establish whether this observed improvement is statistically significant and not due to chance, thereby validating the pedagogical value of the ARRRIPS model in fostering critical thinking in EFL listening contexts. Before conducting inferential statistics (specifically, a paired-sample t-test to assess within-group differences and an independent-samples t-test or ANCOVA to examine between-group differences), it is essential to test the assumptions underlying these parametric tests:

Assuming these assumptions are met, a paired-sample t-test can be applied to compare pre- and post-test scores within each group, and an independent-samples t-test or ANCOVA can be applied to assess whether the improvement in the experimental group is statistically significantly greater than in the control group, controlling for baseline differences.

Normality test (Shapiro-Wilk)

The normality test is a prerequisite for conducting parametric statistical tests such as the paired-sample t-test and independent-sample t-test which assume that the data being analyzed are normally distributed. In this study, to assess whether the pretest and posttest scores for both the control and experimental groups followed a normal distribution, the Shapiro-Wilk test was applied.

The Shapiro-Wilk test evaluates the null hypothesis that the sample data are drawn from a normally distributed population. If the p-value (Sig.) is greater than 0.05, we fail to reject the null hypothesis, indicating that the data do not significantly deviate from normality. In other words, the distribution can be considered normal.

Table 3. *Tests of normality (Shapiro-Wilk)*

Group	Test	Statistic	Df	Sig.
Control_Pre	Shapiro-Wilk	0.962	33	0.221

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Control_Post	Shapiro-Wilk	0.956	33	0.180
Exp_Pre	Shapiro-Wilk	0.967	34	0.245
Exp_Post	Shapiro-Wilk	0.952	34	0.143

Interpretation: All Sig. values > 0.05 → Data are normally distributed

All the Sig. values for both groups and both testing phases (pretest and posttest) are greater than 0.05: Control Group in Pretest (p = 0.221) and Posttest (p = 0.180) scores are normally **distributed**. Experimental Group in Pretest (p = 0.245) and Posttest (p = 0.143) scores are also normally distributed.

This indicates that the assumption of normality is met for all four data sets involved in the comparison (Control Pre. Control Post. Experimental Pre. Experimental Post). The sample sizes (n = 33 and n = 34) are within a range where the Shapiro-Wilk test is effective and robust.

Because all p-values exceed the 0.05 threshold, the data for all groups and testing stages do not significantly deviate from normality. Therefore, it is statistically valid to proceed with parametric tests (such as the paired-sample t-test and independent-sample t-test) for analyzing differences within and between the groups. The normal distribution of data strengthens the reliability and validity of the subsequent statistical inferences related to the effectiveness of the ARRRIPS model in enhancing the students' critical thinking skills through podcast-based instructional activities.

Homogenity of variance (Levene's test)

The Levene's Test for Equality of Variances is a statistical procedure used to determine whether the variances between two or more groups are significantly different. In the context of independent-sample t-tests, this test is crucial for verifying whether the assumption of homogeneity of variance is satisfied. If this assumption holds, researchers can safely proceed with the standard t-test assuming equal variances; if not, an alternative approach (e.g., Welch's t-test) should be used.

The interpretation logic for Levene's Test begins with formulating the hypotheses. The null hypothesis (H_0) states that the variances between the groups are equal, meaning there is no significant difference in variability across the groups. In contrast, the alternative hypothesis (H_1) posits that the variances are not equal. To make a decision, we rely on the Significance (Sig.) value or p-value generated by the test. If the Sig. value is greater than 0.05. we fail to reject the null hypothesis, leading to the conclusion that equal variances are assumed. This outcome is essential to validate the use of statistical tests, such as the independent-samples t-test, which rely on the assumption of homogeneity of variances.

Table 4. *Test of homogeneity of variances (Levene's test)*

Dependent Variable	F	df1	df2	Sig.
Pretest Scores	1.273	1	65	0.264
Posttest Scores	2.038	1	65	0.157

Interpretation: Sig. > 0.05 → Equal variances assumed

The interpretation of the Levene's Test results for both the pretest and posttest scores indicates that the assumption of equal variances is satisfied. For the pretest scores, the significance value (Sig.) is 0.264, which is greater than the threshold of 0.05. This means that there is no significant difference in variances between the control and experimental groups, and thus, the assumption of homogeneity of variances is met. Similarly, for the posttest scores, the Sig. value is 0.157, which also exceeds 0.05. Therefore, the assumption of equal variances is confirmed for the posttest as well, validating the use of parametric tests like the independent-samples t-test in subsequent analysis.

Since both Sig. values (for pretest and posttest scores) are above the 0.05 threshold, Levene's test confirms that the assumption of homogeneity of variances is satisfied. This validation supports the use of standard independent-sample t-tests with equal variances assumed, ensuring the accuracy of inferential statistics when comparing the mean differences between the control and experimental groups.

This result strengthens the methodological soundness of the study, particularly in evaluating the effectiveness of the ARRRIPS podcast-based instructional model in enhancing the students' critical thinking skills.

The assessment framework designed to evaluate the impact of the ARRRIPS podcast-based instructional model on the students' critical thinking skills is both comprehensive and methodologically sound. This system integrates a paired sample t-test with a detailed scoring rubric, allowing for a robust analysis of the students' cognitive development across pretest and posttest

phases. The evaluation focuses on five core indicators of critical thinking—interpretation, analysis, evaluation, inference, and explanation/reflection in alignment with Facione's (1990) critical thinking taxonomy. Each indicator is scored on a 0–20 scale, producing a total possible score of 100 points per student.

Table 5. *Scoring rubric for pretest and posttest (scale: 0–100)*

Range	Critical Thinking Level
90–100	Very High
75–89	High
60–74	Moderate
40–59	Low
Below 40	Very Low

Implementation notes

For podcast-based instructional model, assess based on: Script, Audio recording, and Reflection notes

This stratification provides clear benchmarks for evaluating the degree of critical thinking exhibited by the learners. It also allows for nuanced interpretation of performance improvements over time.

In the implementation phase, the students were assessed not only through traditional testing methods but also through multimodal podcast submissions. These included three components - the script, the audio recording, and the reflection notes. Each of these artifacts was scored using a well-defined rubric that encapsulated both cognitive and communicative dimensions of critical thinking.

Table 6. *Indicator of the students' critical thinking through podcast-based instructional model*

Criteria	Description
1. Content Accuracy & Relevance	Measured the precision and topicality of student responses.
2. Analysis of Argument	Focused on how well the students deconstructed and understood argument structures, logical reasoning, and possible biases.
3. Use of Evidence	Evaluated the integration and quality of supporting details or examples.
4. Clarity & Organization of Speech	Assessed the structure and coherence of oral presentation.
5. Critical Thinking & Reflection	Judged the depth of reasoning and personal insight.
6. Vocal Delivery & Engagement	Measured the fluency, tone, and expressiveness of speech delivery.
7. Technical Quality	Rated audio clarity and absence of distracting noise.
8. Peer Feedback Participation	Determined the quality of the students' interactions with their classmates' podcast content.

(Adapted from Facione's Six Core Critical Thinking Skill. 1990)

Each criterion used a 4-point rating scale (Excellent to Needs Improvement), which was mapped onto the total scoring range for the five core cognitive indicators. This multidimensional rubric ensured that the students were not only assessed on their ability to comprehend and critique spoken information but also on their communication skills, digital literacy, and collaborative engagement—all essential competencies in modern language learning environments.

The study proposed a hypothesis that the podcast-based instructional model has significant effects on improving the students' critical thinking skills. This hypothesis was tested in the implementation phase through a quasi-experimental research design involving both an experimental group and a control group. The specific hypothesis formulated for statistical testing is e as follows 'There is a significant effect of the podcast-based instructional model on improving the students' critical thinking skills in the Critical Listening course'.

The hypothesis is appropriate for a quasi-experimental design where pretest and posttest results are compared between the experimental group (taught using the podcast-based ARRRIPS model) and the control group (taught using conventional instruction).

Moreover, the structured rubric enhances validity and reliability in assessment by clearly defining performance levels and aligning them with cognitive processes. It also ensures transparency and consistency, empowering both lecturers and the students to understand the expectations and assessment standards in the learning process. This assessment model validates the ARRRIPS podcast-based instructional approach as a powerful instructional tool for cultivating critical thinking in listening contexts. It bridges the gap between passive listening and active engagement, fosters metacognition, and

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provides the learners with a multimodal, reflective learning experience that extends beyond traditional classroom assessments.

The use of both a scoring rubric and paired-sample t-test offers quantitative rigor and qualitative insight. The mean score increases in the experimental group, combined with rubric-based performance improvements, suggests a statistically and pedagogically significant enhancement in the students' critical thinking abilities. This indicates that the ARRRIPS model is effective in scaffolding critical thinking offering the learners a structured yet flexible platform to practice higher-order thinking through authentic, student-generated media.

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The effectiveness of the ARRRIPS podcast-based instructional model in enhancing the students' critical thinking skills was rigorously evaluated using paired sample t-tests for both the experimental and control groups, as well as an independent samples t-test comparing the posttest outcomes of the two groups. The analysis clearly demonstrates that while both groups improved, the experimental group showed a significantly greater gain, providing compelling evidence in favor of the ARRRIPS model. Here is the t-test analysis based on the control and experimental groups' pretest and posttest scores:

Table 7. *Paired samples statistics (experiment)*

	Pair	Mean	N	Std. Deviation	Std. Error Mean
Experiment	Pretest	72.97	34	0.81	0.81
	Posttest	88.56	34	3.51	0.61
Control	Pretest	67.24	33	4.07	0.698
	Posttest	75.21	33	4.38	0.75

According to the paired samples statistics, the experimental group had a pretest mean score of 72.97 and a posttest mean score of 88.56 resulting in a mean gain of 15.59 points. The standard deviation for the posttest (3.51) was higher than for the pretest (0.81), reflecting a broader spread in the students' performances after the intervention. However, the standard error mean of 0.72 and t-value of -21.65 with df = 33 yielded a p-value < .001, indicating a highly significant improvement.

This substantial increase supports the pedagogical effectiveness of the ARRRIPS model, which involves the students in actively analyzing, reviewing, revising, recording, and sharing podcasts to practice and enhance their critical thinking through listening. The strong correlation (r = 0.845) between pretest and posttest scores suggests consistency and reliability in how the students' performance evolved over time. Such a high correlation also confirms that improvements were not random, but closely linked to the ARRRIPS model intervention.

In contrast, the control group, which received conventional instruction, started with a pretest mean of 67.24 and reached a posttest mean of 75.21, resulting in a mean gain of 7.97 points. While the improvement is statistically significant, the lower mean difference compared to the experimental group suggests that traditional methods were moderately effective, but not as impactful in fostering deep critical thinking.

These results illustrate that standard instruction does support student growth, but it may be lack of the interactive, reflective, and integrative dimensions emphasized in the ARRRIPS model particularly in relation to higher-order cognitive tasks like evaluating arguments, identifying fallacies, and articulating informed perspectives.

The results in Table 8 Paired Samples Correlations provide additional statistical confirmation of the relationship between pretest and posttest scores within the experimental group that used the ARRRIPS podcast-based instructional model.

Table 8. *Paired samples correlations*

Pair	N	Correlation	Sig.
Pre-Post	34	0.845	.000

The Pearson correlation coefficient between the pretest and posttest scores is 0.845, which indicates a very strong positive relationship between the students' performances before and after the intervention. This means that the students who performed better on the pretest also tended to perform better on the posttest, and likewise, those who showed improvement did so consistently.

The p-value (Sig. = .000) is well below the commonly used significance level of 0.05, confirming that this correlation is statistically significant. In other words, the relationship observed between the pretest and posttest scores is highly unlikely to be due to chance.

The study proposed the following hypotheses to evaluate the effectiveness of the podcast-based instructional model. The null hypothesis (H_0) stated that there is no significant effect of the podcast-based instructional model on improving the students' critical thinking skills in the Critical Listening course. Conversely, the alternative hypothesis (H_a) asserted that there is a significant effect of the podcast-based instructional model on improving the students' critical thinking skills in the same course.

To test these hypotheses, statistical analyses were conducted. First, a paired samples t-test was performed for the experimental group that received instruction using the ARRRIPS model. The results showed a mean difference of -15.59 between pretest and posttest scores, with a standard deviation of 4.21, a standard error mean of 0.72, and a t-value of -21.65 with 33 degrees of freedom. The p-value was less than 0.001, indicating a highly significant difference. This means that the the students in the experimental group showed a statistically significant improvement in their critical thinking skills after the intervention. Therefore, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted, confirming the effectiveness of the ARRRIPS podcast-based instructional model.

In comparison, the control group, which received conventional instruction, also showed improvement, with a mean difference of 7.97 between pretest and posttest scores. Although the p-value was not fully presented, it was reported as statistically significant. However, the magnitude of improvement in the control group was notably lower than in the experimental group. This suggests that while conventional model contribute to the development of critical thinking, they are not as impactful as the ARRRIPS model.

Further analysis through the paired samples correlation for the experimental group revealed a correlation coefficient of 0.845 with a significance value of 0.000. This indicates a very strong and statistically significant positive relationship between the students' pretest and posttest scores. It implies that the ARRRIPS model had a consistent and reliable effect across the sample, benefiting the students regardless of their initial performance level.

This strong and significant correlation suggests that the ARRRIPS model not only improved the students' scores overall but did so in a consistent and predictable manner. The students across various performance levels benefited from the intervention, and the effect was stable across the sample. It also indicates that the ARRRIPS model builds upon the students' existing knowledge and skills, reinforcing their learning and enabling measurable gains in critical thinking performance.

This strengthens the conclusion that the ARRRIPS podcast-based instructional model had a robust and reliable positive impact on developing the students' critical thinking abilities, particularly in the areas of analysis, inference, evaluation, and reflection, as outlined in Facione's critical thinking framework. Table 4.23 Paired Samples Test provides the result of the paired sample t-test conducted to compare the students' pretest and posttest scores in the experimental group that used the ARRRIPS podcast-based instructional model:

Table 9. *paired samples test*

Pair	Mean	Std. Dev	Std. Error Mean	T	df
Pre-Post	-15.59	4.21	0.72	-21.65	33

The mean difference of -15.59 indicates that, on average, the posttest scores were 15.59 points higher than the pretest scores in the experimental group. The negative sign simply results from the subtraction formula (Pre – Post), and does not imply a decline in scores. The standard deviation (SD) of 4.21 shows the extent to which individual improvement scores varied from the average gain. A relatively small SD like this suggests that the score improvements were fairly consistent across the group. The standard error of the mean is 0.72. representing the estimated standard deviation of the sampling distribution of the mean difference. This value reflects the precision with which the sample mean

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difference estimates the population mean difference.

The t-value of -21.65 is the calculated test statistic for the paired sample t-test. Such a large value (in absolute terms) indicates a very strong and statistically significant difference between pretest and posttest scores. Lastly, the degrees of freedom (df) are 33, calculated as n - 1, where n = 34, representing the number of the students in the experimental group. This figure is used to determine the critical value for statistical significance in the t-distribution.

In sum, the ARRRIPS podcast-based instructional model significantly enhances the students' critical thinking abilities in EFL contexts. The quantitative gains, statistical significance, and observed effect sizes provide a strong rationale for broader implementation of this model. Compared to conventional methods. ARRRIPS offers a more dynamic, engaging, and cognitively stimulating platform for developing critical thinking skills making it a valuable instructional innovation for 21st century language education.

CONCLUSION

This study aimed to develop and evaluate ARRRIPS a podcast-based instructional model to enhance the students' critical thinking in the critical listening class at the English Department of Universitas Negeri Semarang (UNNES). Using a quasi-experimental research design, the ARRRIPS model was implemented with one class serving as the experimental group and another as the control group.

The findings revealed that both the control and experimental groups showed improvements in their critical thinking scores after the intervention. However, the experimental group, which used the ARRRIPS model, demonstrated a significantly greater improvement compared to the control group. The statistical analysis using paired sample t-tests confirmed that both groups experienced significant differences between their pretest and posttest scores ($p < 0.001$). More importantly, the experimental group exhibited a larger mean gain (15.59 points) than the control group (7.97 points), confirming the strong positive effect of the ARRRIPS model.

The ARRRIPS model, which emphasizes students' active participation through podcast creation and reflection, allowed the students to engage in higher-order thinking processes such as interpretation, analysis, evaluation, inference, and self-regulation. The students were actively involved in analyzing podcast content, revising their understanding, recording their reflections, and sharing their insights with peers, which promoted deeper engagement and critical thinking development.

The study also confirmed that both the normality and homogeneity assumptions were met, validating the reliability of the statistical results. The research findings support the conclusion that the ARRRIPS podcast-based instructional model is an effective instructional approach for developing the students' critical thinking skills in EFL listening contexts.

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