

The Effectiveness of Argumentative Speaking Skills Learning Using Think-Pair-Square and Think-Pair-Share Models Assisted by Podcast Based on Students' Personality Types

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Abstract

This study examined the effectiveness of learning argumentative text speaking skills using the Think-Pair-Square and Think-Pair-Share models assisted by podcast media while considering the personality of twelfth-grade high school students. This research employed a quasi-experimental method. The subjects were twelfth-grade students at a senior high school, with class XII-4 as the experimental class and class XII-5 as the control class selected through purposive sampling. The independent variables were the Think-Pair-Square and Think-Pair-Share models assisted by podcast media, while the dependent variable was argumentative text speaking skills. Students' personality types were considered as an intervening variable. Data were collected through questionnaires, pre-tests, and post-tests and analyzed using SPSS 23. The results showed that the Think-Pair-Square model assisted by podcast media was more effective than the Think-Pair-Share model assisted by podcast media. The paired sample t-test results in both classes showed a significance value (2-tailed) of 0.000 (<0.05), indicating significant differences between pre-test and post-test scores. The independent sample t-test on post-test data showed a significance value (2-tailed) of 0.036 (<0.05), indicating a significant effect. The N-gain value in the experimental class was 0.41 (medium category), while the control class obtained 0.27 (low category). Descriptive statistics indicated that students with extraverted personality types achieved higher scores in both classes.

1. Introduction

Language has a very important role in human life because it is the main tool in communication. Language distinguishes humans from other creatures because we generally have the ability to communicate in at least one language (Qurrata'ain, 2024: 31). As social beings, humans always interact through communication with others. In Indonesian language subjects, it focuses on developing receptive language skills, namely listening, reading, and watching, as well as productive skills, namely speaking, presenting, and writing. These competencies are built on three aspects that are interrelated and support the development of students, namely aspects of language, literature, and thinking skills. The linguistic aspect focuses on language mastery, the literary aspect includes the ability to understand, appreciate, analyze, and create literary works, while the thinking aspect emphasizes critical, creative, and imaginative abilities (Laksono et al., 2025: 11). The process of acquiring language skills generally takes place gradually: from childhood, humans first learn to listen, then speak, after which they continue to read and write (Tarigan, 2008: 3). Listening and speaking skills are acquired before children enter school. In essence, these four language skills are an inseparable unit, or called single chain. Every language skill is also closely related to the thought process. Language reflects a person's way of thinking, the better the language skills, the clearer the flow of thought. The mastery of language skills can only be achieved through continuous practice and practice. Similar to critical thinking, speaking proficiency requires strong reasoning skills to achieve success (Irianti et al., 2024: 2). Training language means training thinking skills at the same time.

Expressing thoughts and ideas is a form of language for humans. As with the explanation at the beginning, through language, a person can convey ideas, feelings, and experiences to others so that meaningful social interaction is created. Language not only functions as a means of communication, but also as a medium for the formation of social reality. In other words, language helps humans understand the world and shape their perspective on the surrounding environment. This is in line with the view of Sapir (1949: 162) who states that, "Language is a guide to 'social reality'. Though language is ordinarily thought of as of essential interest to the students of social science, it powerfully conditions all our thinking about social problems and processes. Human beings do not live in the objective world alone, nor alone in the world of social activity as ordinarily understood,

but are very much at the mercy of the particular language which has become the medium of expression for their society." Argumentation text learning aims to develop students' critical thinking skills in expressing opinions logically and systematically. In this learning, students are not only trained to speak, but also organize ideas, formulate strong arguments, and provide evidence to support arguments. This process helps students build the ability to reason and communicate effectively. According to Feranti et al., (2024: 733) the ability to think critically in argumentative texts has an important role for high school students. This ability is the foundation for students to channel their creative ideas and ideas. Through speaking argumentative texts, students are required to present facts that can convince the listener that the opinions they convey orally are correct and can be accounted for.

The think-pair-square (TPSq) model consists of three main stages, namely individual thinking (think), discussing in pairs, and continuing to discussions in groups of four (square) (Hidayati, 2024: 19). Through these stages, students are not only given the opportunity to process and develop their own ideas, but also to compare and enrich understanding with partners, then expand them again in larger groups. TPSq is able to make students develop critical thinking, empathy, communication, and cooperation skills (Hadinugrahaningsih et al., 2019: 5). The think-pair-share learning model is one of the cooperative models designed to train students' collaboration skills through the process of exchanging ideas. This collaborative process helps students develop critical thinking, communication, and decision-making skills (Nuzalifa, 2021: 50). The structured stages in TPS help build students' confidence to actively participate in classroom discussions (Mufassaroh et al., 2025: 2). The use of podcast media can be an effective supporting strategy for implementing the think-pair-share and think-pair-square models in the classroom. Through the podcast, students can access learning materials flexibly, both before and after class. This allows them to build initial understanding independently (think), so that discussions with pairs and groups (share/square) become more meaningful. With this flexibility, podcasts have the potential to help students deepen their understanding of the subject matter more effectively (Wadiah et al., 2022: 42). Podcast integration has also emerged as a useful pedagogical approach, offering authentic linguistic input to improve listening and pronunciation skills (Peng et al., 2025:7). Personality types were first formulated through two main dimensions: neuroticism and extraversion (Buchanan, 2005: 940). Individuals with extroverted tendencies are generally sociable, enjoy social activities, have many relationships, prefer crowded environments, and tend to act spontaneously in response to the situation. In contrast, introverted individuals are quieter, reflective, and introspective, tend to withdraw from crowds, avoid impulsive decisions, and prefer a quiet, orderly, and low-risk life (Angraini et al., 2025: 106). In this study is limited to the extraversion dimension (introversion–extraversion).

Based on the research background that has been described, this study focuses on efforts to improve students' speaking skills using the think-pair-square model and the think-pair-share model assisted by podcast media by paying attention to the personality types of extraversion and introversion students. The researcher also limited this study to the use of the two learning models for grade XII students.

The reason for choosing the research location at a senior high school is based on several important considerations. First, from the various variations of learning models available, the researcher chose to research two models, namely think-pair-share and think-pair-square, because these two approaches are considered can help students become more proficient speakers of argumentative texts. Second, after the implementation process of the two models, the researcher intends to conduct a test to find out which model is more effective in improving students' argumentative writing skills. Third, this school has never been used as a research location on the influence of learning models and media on argumentative text speaking skills, so this research can make a new contribution to the development of learning strategies in the school. In addition, as a leading school, it is hoped that the results of this research can be a foothold for efforts to improve the quality of learning in a sustainable manner. Based on the results of several descriptions of speaking skills in argumentative texts, presenting thoughts and ideas, the application of learning models, and the use of educational media, it undoubtedly motivates academics to carry out studies on the effectiveness of speaking skills in presenting thoughts and ideas orally in argumentative texts using the think-pair-share model and the think-pair-square model assisted by podcast media with the personality type of high school students.

2. Method

This research is quantitative research that uses a quasi-experimental methods. The design applied is a nonequivalent control group design, in which treatment is implemented as a learning process using TPSq and TPS media, assisted by broadcast media. This research was carried out in the even semester of the 2025/2026 school year, precisely in January-February 2026 for eight meetings, each class of four meetings. Purposive sampling was used to collect the research sample, and the samples were students in class XII-4 with 35 students and class XII 5 with 36 students of senior high school. Data are collected through tests given before (pre-test) and after (post-test), so that the results of the pre-test and post-test can be compared as well as the calculation of non-test data to see the distribution of scores based on the personality type of the student. The researcher used measurements of both non-tests and tests using empirical analysis, not creating their own questions. The questionnaire was obtained from Eysenck's Personality Inventory (EPI) Total 24 items, while the speaking skills test used empirical data or pre-existing tests. The measurement of speaking skills, especially argumentative

texts, requires the use of certain indicators to obtain accurate results and the test in this study refers to empirical analysis. Here are some indicators: (1) confidence; (2) fluency in speech; (3) accuracy in word selection; (4) coherence; (5) speech mechanics (Hamzah et al., 2025; Harris, 1969; Permana, 2015; Rakhman & Pristiwati, 2015). Tabel 1 presents the assessment of the EPI performance assessment table and questionnaire.

Table 1. Speaking Skills Assessment

| No. | Speaking Aspect | Score | | | | |
|-----|----------------------------|-------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1. | Confidence | | | | | |
| 2. | Fluency in speech | | | | | |
| 3. | Accuracy in word selection | | | | | |
| 4. | Coherence | | | | | |
| 5. | Speech mechanics | | | | | |

According to Djumingin (2017: 596), the student performance data, it can be obtained using the following formula:

$$Final\ Score = \frac{Total\ Acquisition\ Score}{Maximum\ Score\ Amount} \times 100 \tag{1}$$

The total score achieved by students is obtained from the test results, while the maximum score is determined by the number of indicators assessed. Each indicator has a rating scale that ranges from 1 to 5. With 5 indicators, the maximum score students can achieve across all indicators is 25.

Table 2. UPI Questionnaire Grid

| No. | Indicator | Extrovert Items | Introvert Items | Total |
|-----|---------------------------------|-----------------|-----------------|-------|
| 1 | Social or Not Social | - | 2, 7, 9 | 3 |
| 2 | Active or Quiet | 10, 19, 24 | 14 | 4 |
| 3 | Active or Passive | 8 | 17 | 2 |
| 4 | Assertive or Hesitant | 4, 6 | 3 | 3 |
| 5 | Sensation Seeking or Thoughtful | 23 | 16, 18 | 3 |
| 6 | Cheerful or Sad | 1, 11 | 13 | 3 |
| 7 | Dominant or Submissive | 20 | 22 | 2 |
| 8 | Enthusiastic or Pessimistic | 12, 21 | - | 2 |
| 9 | Brave or Fearful | 5 | 15 | 2 |
| | Total Items | 13 | 11 | 24 |

Source: Rizqiyati & Kumala (2023)

Table 3. Criteria for Determining Personality Type

| Score | Personality Type |
|-------|------------------|
| ≥ 12 | Extrovert |
| < 12 | Introvert |

Source: Rizqiyati & Kumala (2023)

In this study, data analysis was carried out using prerequisite tests, including normality and homogeneity tests, and hypothesis tests with t-tests and N-gain tests, using SPSS version 23. The normality and homogeneity tests serve as prerequisites to determine whether the data are normally distributed. Meanwhile, the t-test and N-gain test were used to assess learning effectiveness. Descriptive statistics analysis to see the results of the distribution of grades based on the personality type of the students.

3. Results and Discussion

3.1. Results

This research involves pre- and post-test assessments of the use of virtual reality-based learning media for anecdotal text materials. The effectiveness of this media can be seen in the increase in students' understanding, as evidenced by the difference between the average pre-test and post-test scores. Table 4. is a recapitulation of the data from the pre-test (before being given treatment) and post-test (after the application of learning media).

Table 4. Data Recapitulation Results

| Statistical Name | Experimental Pre-test Results | Control Pre-test Results | Experimental Post-test Results | Control Post-test Results |
|------------------|-------------------------------|--------------------------|--------------------------------|---------------------------|
| N | 35 | 35 | 36 | 36 |
| XMax | 88 | 96 | 96 | 92 |

| Statistical Name | Experimental Pre-test Results | Control Pre-test Results | Experimental Post-test Results | Control Post-test Results |
|--------------------|-------------------------------|--------------------------|--------------------------------|---------------------------|
| XMin | 68 | 76 | 72 | 72 |
| Average | 76.34 | 85.77 | 85 | 82.67 |
| Standard Deviation | 22.75321735 | 26.73901441 | 26.0816 | 24.51357906 |

There are differences between the experimental and control classes' pre-test and post-test outcomes, according to Table 4 data recapitulation results using SPSS. The differences that exist raise curiosity about the hypothesis proposed, namely how much the impact of the two learning on students in grades XII 4 and XII 5 during the learning process. To test this hypothesis, a t-test was performed. Before that, the researcher conducts prerequisite tests first, including:

3.1.1. The Effectiveness of Argumentative Text Learning Using the Podcast Media-Assisted Think-Pair-Square Model

The experimental class's pre-test and post-test results differ significantly, according to the descriptive analysis conducted in SPSS, as shown in Table 4. These striking differences raise curiosity about the hypothesis proposed. To test this hypothesis, a paired-samples t-test was conducted. Before that, the researcher conducts prerequisite tests first, including:

3.1.1.1. Prerequisite Test Analysis

The researcher conducted a data normality test on the experimental class pre-test and post-test data. The data normality test was carried out using SPSS 23 using the Kolmogorov-Smirnov formula. Table 5 is the outputs of the normality test.

Table 5. Normality Test Kolmogorov-Smirnov

| | | Unstandardized Residual |
|---------------------------------|----------------|-------------------------|
| N | | 35 |
| Normal Parameters ^{ab} | Mean | .0000000 |
| | Std. Deviation | 4.27047471 |
| Most Extreme Differences | Absolute | .116 |
| | Positive | .108 |
| | Negative | -.116 |
| Test Statistic | | .116 |
| Asymp. Sig. (2-tailed) | | .200 ^{cd} |

Table 5 shows that the decision was made based on a significance value of 0.200, which is greater than 0.05. Indicates that H0 is accepted. Because the data from the first prerequisite test are normally distributed, it can proceed to the next stage, namely the second prerequisite test, the homogeneity test.

The results of the normality test of pre-test and post-test data using the Kolmogorov-Smirnov test in SPSS 23 showed sig = 0.200 > 0.05. This shows that the pre-test and post-test values for learning speaking skills are normally distributed.

The second prerequisite test is the homogeneity test, which aims to determine whether the variation in the analyzed data is uniform. The homogeneity test was carried out with the help of SPSS 23, the decision criteria are based on a homogeneity value of 0.197 (sig. 2-tailed). The value is greater than 0.05, indicating that H0 is accepted and that the data are from homogeneous populations with the same variance.

The experimental class's pre-test and post-test results for the homogeneity test of significant values were 0.197, which is greater than 0.05. It can be concluded that the data from the homogeneity test for the experimental class in learning argumentation text speaking skills has homogeneous variance.

3.1.1.2. Hypothesis Test

After a prerequisite test is carried out, which is a normality test that states that the sample is normally distributed, followed by a homogeneity test that shows a homogeneous sample. Furthermore, a hypothesis test will be carried out which includes a paired sample t-test. The results are presented in Table 6.

Table 6. Paired Sample T-test Results

| Pair | Pre-test - Post-test | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|------|-------------------------|--------------------|----------------|-----------------|---|--------|---------|----|-----------------|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | | Lower | Upper | | | |
| 1 | | -9.429 | 4.434 | .750 | -10.952 | -7.905 | -12.579 | 34 | .000 |

Based on the paired-samples t-test results for the pre-test and post-test of the experimental class, using SPSS, a significance value (2-tailed) of 0.000 was obtained, indicating that the difference is significant ($p < 0.05$). Thus, it can be concluded that H_0 is rejected, which indicates that there is a significant difference between the average pre-test and post-test scores.

The acquisition category for N-gain value is determined by the N-gain value itself or as a percentage (%). In this study, the N-gain value itself determines it. Hypothesis tests were conducted to assess the effectiveness of learning argumentative speaking skills. The use of average scores in hypothesis testing varies based on the data used; the average value is taken from the N-gain score interval in the N-gain score criterion. These criteria are used to assess the effectiveness of learning. Therefore, in this study, learning is considered effective if the N-gain score meets the medium or high criteria (≥ 0.3). The table above shows that the N-gain of 0.4 is greater than 0.3 and 0.7. Based on the data in the table above, we can conclude that the experimental class's instruction on speaking skills is effective.

3.1.2. The Effectiveness of Argumentative Text Learning Using a Podcast Media-Assisted Think-Pair-Share Model

Pre-test and post-test results in the control group differed significantly, as indicated by the descriptive analysis conducted in SPSS (Table 4). These striking differences raise curiosity about the hypothesis proposed. To test this hypothesis, a paired-samples t-test was conducted. Before that, the researcher conducts prerequisite tests first, including:

3.1.2.1. Prerequisite Test Analysis

Researchers conducted tests on Normality Data on the pre-test and Post-test control class. Test for normality is carried out in SPSS 23 using the Kolmogorov-Smirnov test. The normality test results is presented in Table 7.

Table 7. Normality Test Kolmogorov-Smirnov

| | | Unstandardized Residual |
|----------------------------------|----------------|-------------------------|
| N | | 36 |
| Normal Parameters ^{a,b} | Mean | .0000000 |
| | Std. Deviation | 4.88475929 |
| Most Extreme Differences | Absolute | .124 |
| | Positive | .100 |
| | Negative | -.124 |
| Test Statistic | | .124 |
| Asymp. Sig. (2-tailed) | | .181 ^c |

Table 7 shows that the decision was made based on a significance value of 0.181, which is greater than 0.05. Indicates that H_0 is accepted. Because the data from the first prerequisite test are normally distributed, it can proceed to the next stage, namely the second prerequisite test, the homogeneity test.

The results of the normality test of pre-test and post-test data using the Kolmogorov-Smirnov test in SPSS 23 showed sig = 0.181 > 0.05. This shows that the pre-test and post-test values for learning speaking skills are normally distributed.

The second prerequisite test is the homogeneity test, which aims to determine whether the variation in the analyzed data is uniform. The homogeneity test was carried out using SPSS 23; the decision criteria are based on a homogeneity value of 0.272 (sig. 2-tailed). The value is greater than 0.05, indicating that H_0 is accepted and that the data are from homogeneous populations with the same variance.

3.1.2.2. Hypothesis Test

The homogeneity test significance value for the pre-test and post-test of the control class was 0.272, which is greater than 0.05. It can be concluded that the data from the homogeneity test for the control class in the learning of argumentative text-speaking skills exhibit homogeneous variance.

After a prerequisite test is carried out, which is a normality test that states that the sample is normally distributed, followed by a homogeneity test that shows a homogeneous sample. Furthermore, a hypothesis test will be conducted, including a paired-samples t-test. The results is presented in Table 8.

Table 8. Paired Sample T-test Test Results

| | Paired Differences | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) |
|--|--------------------|------|----------------|-----------------|---|----------------------|---|----|-----------------|
| | | | | | Lower | Upper | | | |
| | | | | | Pair 1 | Pre-test - Post-test | | | |

Based on the paired-samples t-test results for the pre-test and post-test of the control class, using SPSS, a significance value (2-tailed) of 0.000 was obtained, indicating that the difference is less than 0.05. Thus, it can be concluded that H0 is rejected, indicating a significant difference between the average pre-test and post-test scores.

The acquisition category for N-gain value is determined by the N-gain value itself or as a percentage (%). In this study, the N-gain value itself determines it. Hypothesis tests were conducted to assess the effectiveness of learning argumentative speaking skills. The use of average scores in hypothesis testing varies based on the data used; the average value is taken from the N-gain score interval in the N-gain score criterion. These criteria are used to assess the effectiveness of learning. Therefore, in this study, learning is considered effective if the N-gain score meets the medium or high criteria (≥ 0.3). The table above shows that the N-gain is 0.27, which is less than 0.3. Based on the data in the table above, we can conclude that learning speaking skills in the control class is less effective.

3.1.2.3. Difference Test Two Average Post-test Learning Textual Speaking Skills Argumentation between the Podcast-Media-Assisted TPSq Model and the Podcast Media Assisted TPS Model

Based on the descriptive analysis using SPSS, there is a difference between the post-test results in the experimental and control classes. These striking differences raise curiosity about the hypothesis proposed. To test this hypothesis, an independent-samples t-test was conducted. Before that, the researcher conducts prerequisite tests first, including:

3.1.2.4. Prerequisite Test Analysis

The researcher conducted a normality test on the post-test data from the experimental and control classes. The data normality test was carried out using SPSS 23 using the Kolmogorov-Smirnov formula. Table 9 present the outputs of the normality test.

Table 9. Normality Test Kolmogorov-Smirnov

| | | Unstandardized Residual |
|----------------------------------|----------------|-------------------------|
| N | | 35 |
| Normal Parameters ^{a,b} | Mean | .0000000 |
| | Std. Deviation | 6.28248860 |
| Most Extreme Differences | Absolute | .114 |
| | Positive | .112 |
| | Negative | -.114 |
| Test Statistic | | .114 |
| Asymp. Sig. (2-tailed) | | .200c,d |

Table 9 shows that the decision was made based on a significance value of 0.200, which is greater than 0.05. Indicates that H0 is accepted. Because the data from the first prerequisite test are normally distributed, it can proceed to the next stage, namely the second prerequisite test, the homogeneity test.

The results of the normality test of pre-test and post-test data using the Kolmogorov-Smirnov test in SPSS 23 showed sig = 0.200 > 0.05. This shows that the post-test variable for speaking skill learning is normally distributed.

The second prerequisite test is the homogeneity test, which aims to determine whether the variation in the analyzed data is uniform. The homogeneity test was carried out using SPSS 23; the decision criterion was a

homogeneity value of 0.731 (sig. 2-tailed). The value is greater than 0.05, indicating that H0 is accepted and that the data are from homogeneous populations with the same variance.

The significance value of the homogeneity test for the control class pre-test and post-test was 0.731, which is greater than 0.05. It can be concluded that the data from the homogeneity test for the post-test of the experimental and control classes in the learning of argumentative text speaking skills exhibit homogeneous variance.

3.1.2.5. Hypothesis Test

After a prerequisite test is carried out, which is a normality test that states that the sample is normally distributed, followed by a homogeneity test that shows a homogeneous sample. Furthermore, a hypothesis test will be conducted using an independent-samples t-test. The results is presented in Table 10.

Table 10. Independent Sample T Test Results

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|-------------------------|-----------------------------|---|------|------------------------------|--------|-----------------|-----------------|-----------------------|---|-------|
| Result | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| Equal variances assumed | Equal variances assumed | .119 | .731 | 2.138 | 69 | .036 | 3.105 | 1.452 | .208 | 6.002 |
| | Equal variances not assumed | | | 2.140 | 68.964 | .036 | 3.105 | 1.451 | .210 | 6.000 |

Based on the results of the independent sample t-test in the post-test of the experimental class and the control class, a significance value (2-tailed) of 0.036 was obtained, which means that the value is less than 0.05. Thus, H0 is rejected, indicating a significant difference in the average post-test scores. To assess the extent of the effectiveness of learning argumentative text-speaking skills using the TPSq model assisted by podcast media and the TPS model assisted by podcast media, we can examine group statistics analyzed in SPSS 23. The average score (mean) of class XII-4, the experimental class, was 85.77, while the average score of class XII-5, the control class, was 82.67, indicating that students' argumentative text skills were higher in the experimental class (a difference of 3.1). This demonstrates that students in the experimental class develop argumentative text speaking abilities more effectively than those in the control class.

The N-gain test analysis revealed a difference in the experimental class's gain score compared to the control class. The experimental class's gain score was 0.41, whereas the control classes was 0.27. These findings demonstrate improved performance when using the TPSq model in conjunction with podcast media. Therefore, for contentious text material, learning with the TPSq model and podcast media is more successful than learning with the TPS model and podcast media.

3.1.3. Distribution of Values of Students with Extroversion and Introversion Personalities in Learning Argumentative Text Speaking Skills

In the experimental and control classes, non-tests have been administered before the research is conducted, in the form of extroversion and introversion personality tests. Using this data, descriptive statistics will be conducted in SPSS 23 to examine the distribution of students' scores by personality type. After that, it will be concluded which personality type is inclined toward the TPSq learning model, assisted by podcast media, and the TPS learning model, assisted by podcast media. Here are the results of the analysis:

Table 11. Descriptive Results of the Analysis

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--------------------|----|---------|---------|-------|----------------|
| Experiment_E | 23 | 76 | 96 | 86.00 | 6.410 |
| Experiment_I | 12 | 80 | 92 | 85.33 | 5.211 |
| Control_E | 23 | 72 | 92 | 83.65 | 7.023 |
| Control_I | 13 | 76 | 88 | 80.92 | 4.368 |
| Valid N (listwise) | 12 | | | | |

Based on the Table 11, the average score for experimental extroversion students was 86.00, while the average score for introversion in the experimental class was 85.33. Meanwhile, in the control class, the average score of extroversion was 83.65 and the average score of introversion was 80.92. Figure 1 is a further explanation for both the experimental class and the control class.

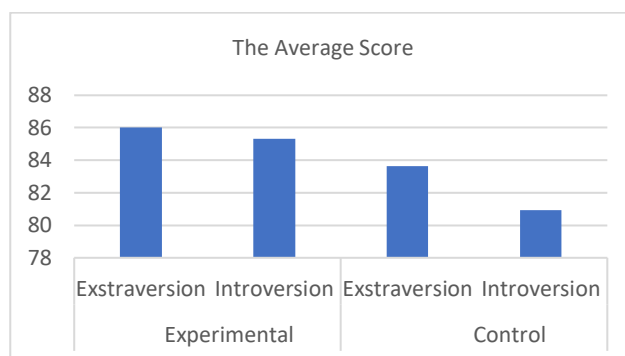


Figure 1. Average Score of Personality Type Experiment and Control Class

Based on the data recapitulation, there is a difference in students' average scores depending on the researcher's learning style. Extroversion students excelled in both experimental and control classes. This shows that both learning methods have proven more effective in teaching students with extroverted personality types argumentative text speaking skills.

3.2. Discussion

In explaining the relationship between learning and cognitive development, learning is not just a process of knowledge transfer, but a mechanism that actively shapes a child's mental development. Through social interaction, especially cooperation with peers, learning creates conditions that foster the emergence of developmental potential. This emphasizes by Vygotskii (1978), the main characteristic of learning is its ability to form a *zone of proximal development* (ZPD). Learning triggers various internal developmental processes that can occur only when children interact with others in their environment, including through cooperation with peers. After these processes are internalized, the results become part of the child's independent development ability. Therefore, the researcher tested two cooperative learning methods in this study.

In addition, the researcher also pays attention to students' extroversion and introversion personality types, because arthese the background factors in learning, namely, on the psychological side. This is reinforced by the view that development is the main prerequisite for learning. If the child's mental functions, including his intellectual operations, have not reached a certain level of maturity, then learning in certain areas has not given effective results. This view also emphasizes concerns about teaching that is done too early, that is, when the material is given before the child is really ready. Therefore, the main attention is directed to the determination of the minimum limit of learning ability, i.e. the age or stage of development when a type of learning begins to be possible to be given. In accordance with this explanation, it shows the importance of the psychological side of students in learning; of course, this is the reason why the researcher examined it.

This research involves two classes: the experimental and the control. Class XII-4 is a learning experiment class with a TPSq model assisted by broadcast media, while class XII-5 is a learning control class with a TPS model assisted by broadcast media. This research was conducted at a senior high school with a sample of 34 students (experimental class) and 35 students (control class). There were eight meetings in this study: four for the experimental class XII-4 and four for the control class XII-5, each lasting 90 minutes. The purpose of this study is to find out the learning of effective argumentative text speaking skills.

Class XII-4 is an experimental class, learning argumentative text speaking skills using the TPSq model assisted by podcast media, which is expected to increase the active participation of students in the learning process. With this learning, students can interact more actively. All students will focus on the material being taught, so that not only smart students can appear to speak in class. This encourages each student to be actively involved throughout learning, the learning atmosphere becomes more in-depth, which allows students to more easily understand the material taught by the teacher. This can be proven from the results of the speaking ability of students in class XII-4 on the pre-test and post-test data, with a score of 0.41, which is greater than 0.3 and ≤ 0.7 . From this data, we can conclude that speaking skills training is effective in improving the learning outcomes of senior high school students. Non-test data from extroversion and introversion personality tests in this class showed that extroversion students scored higher. Therefore, this learning is suitable for extroverted students.

In line with the research of Hadinugrahaningsih et al. (2019: 5), the TPSq model can improve critical thinking skills, empathic communication, cooperation, and reflection. Students are actively involved in learning

through discussions, debates, and presentations. Rahmi and Rayhana (2020: 32) emphasized that think-pair-square learning is effective in fostering aspects of learning motivation, such as perseverance, tenacity, interest, achievement, and students' independence. Students become more diligent in attending school, more persistent in solving difficult problems, more focused and active during learning, more motivated to achieve high standards, and begin to get used to learning independently.

Class XII-5 or control class, learning argumentative text speaking skills using the TPS model, assisted by podcast media. This model is not too in-depth compared to TPSq, of course, it influences the results of students' scores. This results in the expected learning objectives not being fully achieved. In addition, there was a difference in average speaking ability between students in the experimental and control classes. This can be shown in the results of students' speaking ability in grades XII-5, with a pre-test and post-test N-gain score of 0.27, which is smaller than 0.3. From this data, it can be concluded that speaking skills training is not effective in improving learning outcomes for senior high school students. Non-test data from extroversion and introversion personality tests in this class showed that extroversion students scored higher. Therefore, this learning is suitable for extroverted students.

It does not guarantee that every learning is effective. In accordance with the research of Wahyuni et al. (2025: 765), although TPS can encourage collaboration and the exchange of ideas, discussion activities in TPS are sometimes not in-depth, so participants have not fully honed their critical thinking skills. As for research by Sundari and Nabilah (2021), the weaknesses of the TPS learning model are, among others: 1) it requires simultaneous coordination. 2) Requires specific training. 3) Many group complaints. 4) Few ideas presented. 5) The odd number of students is difficult. 6) Teacher skills and mastery that are urgently needed.

The results of students' speaking skills between class XII-4 and class XII-5 in the form of pre-tests showed that the average score of class XII-4 was 76.34, while that of class XII-5 was 75.89. The highest score in class XII-4 is 88 and the lowest score is 68, while in class XII-5, the highest score is 88 and the lowest score is 68. After being given treatment in the form of learning using the TPSq model assisted by podcast media in class XII-4 as an experimental class, the post-test scores ranged from 76 to 96, with an average of 85.77. Meanwhile, the post-test scores of the control class ranged from 72 to 92, with an average of 82.67. From these results, the control class has a smaller result.

The data were then analyzed using Statistical Product and Service Solutions (SPSS) software with a t-test. The t-test applies to parametric data; first, a prerequisite test is conducted, including normality and homogeneity tests. After testing using SPSS, the sample was shown to be normally distributed and homogeneous. Next, the test was conducted using a t-test at the 5% significance level. In the two-way test, the average 2-tailed p-value was 0.036, which is smaller than the significance level of 0.05. This shows that H₀ is rejected, indicating a significant difference between the experimental and control classes.

Based on the results of data analysis, it can be concluded that learning using TPSq assisted by podcast media has a significant influence on students' speaking skills. The use of this media-assisted model has been proven to be effective in improving students' argumentative writing skills. This can be seen from the test, which has proven to be effective. Therefore, it can be concluded that the learning is effective in improving the speaking skills of argumentative texts of grade XII students at senior high school.

Regarding TPS, learning model does not have a significant influence on students' speaking skills. The use of this medium is ineffective. This can be seen from the test, it is not effective. Therefore, it can be concluded that this learning is not effective in improving the speaking skills of argumentative texts of grade XII students at senior high school.

Based on the distribution of existing values. Extroversion students were found to be superior in both learning using the TPSq model assisted by podcast media and learning using the TPS model assisted by podcast media. This can be seen in the descriptive statistics, with extroversion students averaging 86.00 and introversion students averaging 85.33. Meanwhile, in the control class, the average extroversion score was 83.65, and the average introversion score was 80.92. This shows that both learning methods have proven more effective in teaching argumentative speaking skills to students with extroverted personality types in senior high school.

In essence, learning using TPSq is the same as TPS, but in TPSq learning, there are additional stages that allow students to discuss again. This is the assumption that TPSq is more comprehensive than TPS. The TPSq model consists of three main stages, namely individual thinking, discussing in pairs, and continuing to discuss in groups of four (square) (Hidayati, 2024). Through these stages, students are not only given the opportunity to process and develop their own ideas, but also to compare and enrich understanding with partners, then expand them again in larger groups.

4. Conclusion

The results of the study show that learning argumentative speaking skills using the TPSq model, supported by podcast media, has proven effective in improving students' abilities. This is shown by the N-gain score of 0.41 in grades XII-4, which is in the medium category (greater than 0.3 and ≤ 0.7), so it can be concluded that the model is effective on the learning outcomes of senior high school students. On the other hand, learning using the TPS model assisted by podcast media in grades XII-5 was declared ineffective because it obtained an N-gain score of 0.27, which was below 0.3. Furthermore, the independent-samples t-test ($p = 0.036$; $p < 0.05$) showed a significant difference between the two learning models, with the average class score for classes using TPSq assisted by podcast media being higher than those using TPS assisted by podcast media. Thus, it can be stated that the implementation of TPSq, assisted by podcast media, has a significant effect on the speaking skills in argumentative texts of grade XII students in senior high school. In addition, based on descriptive statistical analysis that considers personality type, extroversion students obtain higher scores than introversion students, indicating that both learning models are more effective for students with extroversion personality types in senior high school.

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Data Availability

The datasets generated during and/ or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration on AI Use

The authors declare that no artificial intelligence (AI) or AI-assisted tools were used in the preparation of this manuscript.

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