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Talking Chips Cooperative Learning and Students' Critical Thinking in Speaking

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Abstrak

Penelitian ini mengkaji penggunaan pembelajaran kooperatif Talking Chips dalam kaitannya dengan kemampuan berpikir kritis siswa kelas sebelas pada pembelajaran berbicara bahasa Inggris di SMAN 9 Mataram. Studi ini menggunakan desain kuasi-eksperimental dengan kelompok kontrol yang tidak setara nonequivalent control-group design selama tahun ajaran 2024/2025. Sebanyak 50 siswa berpartisipasi, yang terdiri dari 25 siswa di kelas eksperimen dan 25 siswa di kelas kontrol. Kelas eksperimen mendapatkan pembelajaran dengan metode Talking Chips, sementara kelas kontrol mengikuti pembelajaran konvensional. Pretest dan posttest digunakan untuk menilai lima dimensi berpikir kritis: interpretasi, analisis, evaluasi, inferensi, dan penjelasan. Skor rata-rata kelompok eksperimen meningkat dari 36,36 menjadi 41,52, sedangkan skor rata-rata kelompok kontrol meningkat dari 31,32 menjadi 34,16. Distribusi data kelompok eksperimen tidak berdistribusi normal dan varians antar kelompok tidak sama, sehingga dilakukan uji Mann–Whitney U ($U = 148{,}50$, $p = 0{,}001$). Hasil uji tersebut menunjukkan adanya perbedaan yang signifikan secara statistik di antara kedua kelompok. Temuan ini mengindikasikan adanya hubungan yang menjanjikan antara pembelajaran Talking Chips dengan kemampuan berpikir kritis; namun, adanya perbedaan awal antar kelompok serta penggunaan desain yang tidak setara membatasi penarikan kesimpulan mengenai hubungan sebab-akibat. Penelitian lebih lanjut dengan kontrol yang lebih ketat disarankan untuk dilakukan.

Kata kunci: talking chips; pembelajaran kooperatif; berpikir kritis; keterampilan berbicara; EFL

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Abstract

This study investigated the use of Talking Chips cooperative learning in relation to eleventh-grade students' critical thinking in English speaking lessons at SMAN 9 Mataram. A quasi-experimental nonequivalent control-group design was employed during the 2024/2025 academic year. Fifty students participated, comprising 25 students in the experimental class and 25 in the control class. The experimental class received Talking Chips instruction, while the control class followed conventional instruction. Pretests and posttests assessed five dimensions of critical thinking: interpretation, analysis, evaluation, inference, and explanation. The experimental group's mean score increased from 36.36 to 41.52, whereas the control group's mean increased from 31.32 to 34.16. Nonnormal experimental-group distributions and unequal variances, leading to a Mann–Whitney U test ($U = 148.50$, $p = .001$). The reported test indicates a statistically significant difference between the groups. The findings suggest a promising association between Talking Chips instruction and critical-thinking performance, while baseline differences and the nonequivalent design limit causal interpretation. Further controlled research is recommended.

Keywords : talking chips; cooperative learning; critical thinking; speaking; EFL

INTRODUCTION

Speaking is one of the essential skills in learning English because it enables students to communicate their ideas, opinions, feelings, and perspectives effectively. Through speaking activities, students are expected not only to produce appropriate language but also to organize their thoughts, provide reasonable arguments, and respond critically to different situations. (Setiawan, 2025).

Therefore, speaking instruction should not focus exclusively on linguistic competence but should also encourage the development of students' critical thinking skills. Critical thinking plays an important role in helping students analyze information, evaluate arguments, solve problems, and make logical decisions. Cottrell (2017) emphasizes that critical thinking is an essential ability that can be applied across different situations and aspects of everyday life. Furthermore, Conklin (2012) explains that higher-order thinking

skills (HOTS) involve critical and creative thinking, which enable learners to process information beyond simple memorization. Integrating critical thinking into speaking instruction is therefore important for developing students who can communicate their ideas confidently, logically, and meaningfully.

Despite the importance of speaking and critical thinking, many students continue to experience difficulties expressing their ideas during English classroom activities. Students frequently depend on teachers' explanations, memorize learning materials without fully understanding the concepts, and demonstrate limited participation in classroom discussions. These problems were also identified during preliminary observations conducted at SMAN 9 Mataram between April and June 2023. The observations indicated that students experienced several difficulties when participating in English speaking activities, including low self-confidence, limited motivation, embarrassment, and fear of making mistakes. Although some students understood the learning materials, they struggled to explain their opinions, develop arguments, and respond to questions using their own words. In addition, classroom instruction tended to rely on monotonous teaching methods that provided limited opportunities for active student participation. These conditions suggested that students needed a more interactive learning environment that could encourage them to express ideas, exchange perspectives, and develop critical thinking through meaningful speaking activities.

One instructional approach that may address these challenges is cooperative learning, particularly the Talking Chips technique. Cooperative learning encourages students to work collaboratively, exchange information, and support one another in achieving learning objectives. Within this approach, Talking Chips provides structured opportunities for students to participate equally in group discussions. Each student receives a limited number of chips that must be used when contributing ideas, asking questions, or responding to other group members. Students who have used all their chips must wait until other members have participated before speaking again. This procedure helps prevent individual students from dominating discussions while encouraging quieter students to contribute. According to Kagan and Kagan (2009), the Talking Chips technique organizes group interaction by providing each participant with opportunities to express ideas and listen to others. Through these activities, students are encouraged to consider different

perspectives, formulate responses, and communicate their reasoning. Consequently, Talking Chips has the potential to support the development of critical thinking skills while promoting active participation in English speaking activities.

Critical thinking was operationalized through interpretation, analysis, evaluation, inference, and explanation, reflecting Facione's framework (Facione, 2020). Related UNDIKMA research has connected instructional approaches with critical thinking in English reading (Hanan et al., 2020), examined the effects of teaching approaches and anxiety on speaking (Suadiyatno et al., 2020), and explored cooperative learning in language instruction (Hanan & Tawali, 2024). These studies provide local pedagogical context without constituting direct replications of the Talking Chips intervention.

Previous studies have demonstrated the potential benefits of the Talking Chips technique in English language instruction. Syafryadin (2020) investigated the influence of Talking Chips on students' speaking achievement and reported improvements in speaking fluency and accuracy following its implementation. Similarly, a study conducted by Fitri, Sari, Eliyati, and Aisyah examined the effect of Talking Chips on students' speaking ability and found that students taught using this technique achieved better speaking performance than those taught through conventional discussion methods. These findings suggest that Talking Chips can facilitate classroom interaction and improve students' oral communication skills. However, the previous studies primarily emphasized speaking achievement, particularly fluency, pronunciation, vocabulary, grammar, and comprehension. Less attention was given to examining how the technique influences students' critical thinking within speaking activities. This distinction identifies a research gap concerning the effectiveness of Talking Chips in developing students' abilities to interpret information, analyze problems, evaluate arguments, draw conclusions, and explain their reasoning. Therefore, further investigation is necessary to determine whether the benefits of Talking Chips extend beyond speaking performance to the development of critical thinking skills in English language classrooms.

Based on these considerations, the present study aimed to investigate the effect of the Cooperative Learning Talking Chips technique on students' critical thinking in speaking at SMAN 9 Mataram. Specifically, the study focused on eleventh-grade students and examined whether the implementation of Talking Chips could produce differences in critical

thinking skills compared with conventional teaching methods. The investigation emphasized critical thinking abilities related to interpretation, analysis, evaluation, inference, and explanation, as reflected in students' responses to speaking-related learning tasks. By examining these aspects, the study sought to provide empirical evidence regarding the effectiveness of Talking Chips as an alternative instructional technique for integrating critical thinking into English speaking instruction. The findings were expected to contribute to English language teaching by providing practical insights for teachers seeking to create more participatory, collaborative, and intellectually engaging classroom environments.

METHODS

Research Design

This study employed a quantitative approach using a quasi-experimental research design to investigate the effect of the Cooperative Learning Talking Chips technique on students' critical thinking skills in speaking. According to Creswell (2012), quantitative research involves collecting, analyzing, and interpreting numerical data to examine research problems. The study adopted a nonequivalent control group design involving an experimental group and a control group without random assignment. Both groups completed a pre-test and a post-test. The experimental group received instruction using the Talking Chips technique, while the control group was taught through a conventional teacher-centered learning approach. This design allowed the researcher to compare students' critical thinking performance before and after the instructional treatments.

Population and Sample

The research was conducted at SMAN 9 Mataram, West Nusa Tenggara, Indonesia, during the 2024/2025 academic year. The population consisted of 127 students distributed across five science classes, with class sizes ranging from 25 to 26 students. The research sample comprised 50 students divided into two groups: an experimental class and a control class. The participants were selected using purposive sampling, in which samples were determined based on specific considerations relevant to the research objectives (Sugiyono, 2016). The experimental group was taught using Cooperative Learning Talking Chips, whereas the control group received conventional instruction. The study focused on examining students' critical thinking skills within English speaking activities.

Research Instruments and Data Collection

The primary research instruments were speaking tests and an analytical assessment rubric designed to measure students' critical thinking skills. The assessment rubric was based on Facione's critical thinking framework, covering five indicators: interpretation, analysis, evaluation, inference, and explanation. A voice recorder was also used to document students' spoken responses during the assessment process. Data were collected through pre-tests and post-tests administered to both the experimental and control groups. The pre-test was conducted before the instructional treatment to identify students' initial critical thinking abilities in speaking. Following the implementation of the Talking Chips technique in the experimental group and conventional instruction in the control group, a post-test was administered to measure students' performance after the treatment. Students' responses were evaluated using the analytical rubric to obtain quantitative scores representing their critical thinking abilities.

Data Analysis

The collected data were analyzed quantitatively by comparing students' pre-test and post-test scores in the experimental and control groups. The analysis involved three statistical procedures: normality testing, homogeneity testing, and hypothesis testing. First, a normality test was conducted to examine whether the data followed a normal distribution, with a significance value of 0.05 used as the decision criterion. Second, a homogeneity test was performed to determine whether the variances of the experimental and control groups were statistically homogeneous. A significance value greater than 0.05 indicated homogeneous variances, whereas a value below 0.05 indicated unequal variances. Finally, hypothesis testing was conducted at a significance level of 0.05 to determine whether the Talking Chips technique had a statistically significant effect on students' critical thinking skills in speaking. The alternative hypothesis (Ha) was accepted when the significance value was below 0.05 and rejected when the value exceeded 0.05. These statistical procedures were used to evaluate differences in students' critical thinking performance between the two instructional groups.

RESULTS AND DISCUSSION

This study investigated the effect of Cooperative Learning Talking Chips on students'

critical thinking skills in speaking at SMAN 9 Mataram during the 2024/2025 academic year. The research involved 50 eleventh-grade students divided into an experimental group (25 students) and a control group (25 students). The experimental group received instruction using the Talking Chips technique, while the control group was taught through conventional instruction. Students' critical thinking skills were assessed through pre-tests and post-tests, focusing on five indicators: interpretation, analysis, evaluation, inference, and explanation.

Students' Pre-test and Post-test Performance

The descriptive analysis showed that both groups experienced improvements in their critical thinking scores. However, the experimental group demonstrated a greater increase than the control group.

Table 1. Descriptive Statistics of Students' Critical Thinking Scores

Group	N	Pre-test Mean	Post-test Mean	Mean Gain
Experimental	25	36.36	41.52	+5.16
Control	25	31.32	34.16	+2.84

The experimental group's mean score increased from 36.36 to 41.52, representing an improvement of 5.16 points. Meanwhile, the control group's mean score increased from 31.32 to 34.16, representing an improvement of 2.84 points. These findings indicate that students who received Talking Chips instruction showed greater descriptive improvement than those who received conventional instruction. Nevertheless, the experimental group already had a higher mean score at the pre-test stage, which should be considered when interpreting the results.

Critical Thinking Performance Across Five Indicators

The analysis also examined students' performance across the five critical thinking indicators. The data presented in two charts comparing the experimental and control groups before and after treatment.

Table 2. Mean Scores for Each Critical Thinking Indicator

Indicator	Control Pre	Control Post	Experimental Pre	Experimental Post
Interpretation	7.44	7.44	8.96	9.60
Analysis	6.20	6.72	7.56	8.36
Evaluation	6.08	6.80	6.64	7.32

Inference	5.96	6.68	6.52	7.12
Explanation	5.96	6.50	6.76	9.04

The experimental group achieved higher post-test scores across all five indicators. The greatest improvement was observed in explanation, which increased from 6.76 to 9.04. This was followed by analysis, evaluation, interpretation, and inference. These results suggest that Talking Chips activities may have provided opportunities for students to develop their ability to explain ideas, analyze information, and formulate responses during speaking activities.

Normality, Homogeneity, and Hypothesis Testing

Before conducting hypothesis testing, the data were examined using normality and homogeneity tests. The Shapiro–Wilk test showed that the control group's pre-test and post-test scores were normally distributed, with significance values of 0.156 and 0.146, respectively. However, the experimental group's pre-test and post-test scores were not normally distributed, with significance values of 0.001 and less than 0.001. Furthermore, Levene's test indicated unequal variances between the groups ($p = 0.003$). Therefore, the researcher applied the non-parametric Mann–Whitney U test.

Table 3. Statistical Hypothesis Testing Results

Statistical Measure	Result
Mann–Whitney U	148.500
Wilcoxon W	473.500
Z-value	−3.194
Asymp. Sig. (2-tailed)	0.001
Significance level	0.05

The Mann–Whitney U test produced a significance value of 0.001, which was below the predetermined significance level of 0.05. This result indicates a statistically significant difference between the groups for the outcome tested. However, the data interpreted showing no effect of Talking Chips, despite reporting a significance value below 0.05. This inconsistency requires correction before publication. Furthermore, the test result alone does not establish the magnitude of a treatment effect or fully account for the initial differences between the groups.

DISCUSSION

The findings demonstrated that students taught using the Cooperative Learning Talking Chips technique achieved higher critical thinking scores than those who received conventional instruction. The experimental group's mean score increased from 36.36 in the pre-test to 41.52 in the post-test, while the control group's mean score increased from 31.32 to 34.16. Although both groups showed improvement, the experimental group demonstrated a greater descriptive gain. This finding suggests that the structured group discussions provided through Talking Chips may support students' critical thinking development during English speaking activities. However, the higher initial performance of the experimental group should be considered when interpreting the differences between the two groups.

The improvement in students' critical thinking performance can be discussed in relation to Facione's (2016) framework, which emphasizes five critical thinking indicators: interpretation, analysis, evaluation, inference, and explanation. The experimental group demonstrated improvement across all five indicators, with the most noticeable increase occurring in explanation. This finding suggests that structured speaking opportunities may help students communicate their reasoning and express ideas more clearly. Prihono and Khasanah (2020) also emphasized the importance of critical thinking in developing students' analytical and evaluative abilities to understand problems and make appropriate decisions. Within the Talking Chips learning process, students were encouraged to participate in discussions, consider different opinions, and formulate responses, providing opportunities to practice these cognitive skills.

The findings are also relevant to previous research on the Talking Chips technique. Syafryadin (2020) reported that the implementation of Talking Chips improved students' speaking performance, particularly fluency and accuracy. Similarly, the study conducted by Fitri, Sari, Eliyati, and Aisyah, found that students taught using Talking Chips demonstrated better speaking achievement than those receiving conventional instruction. While these previous studies primarily examined speaking performance, the present study focused on critical thinking within speaking activities. The descriptive improvements observed in the experimental group are consistent with the potential benefits of structured collaborative learning, although the present findings concern a different learning outcome.

The analysis of students' individual responses provided further insight into their critical thinking abilities. Students who obtained higher scores generally demonstrated better abilities to identify problems, provide reasons, formulate conclusions, and explain their opinions. The highest post-test score in the experimental group was 74, which was categorized as very good. In contrast, students with lower scores tended to provide short responses, limited explanations, and insufficient supporting arguments. These differences indicate that students' ability to communicate ideas was closely related to their capacity to organize reasoning and elaborate on information. Anderson (2011), highlighted the importance of reading activities in developing critical thinking through analyzing information and drawing conclusions. This perspective supports the need to combine speaking practice with activities that encourage students to explore information and construct meaningful arguments.

The statistical analysis produced a Mann–Whitney U value of 148.500 and a two-tailed significance value of 0.001, indicating a statistically significant difference between the groups on the tested outcome. Nevertheless, a contradictory interpretation by concluding that Talking Chips had no effect. Based on the reported significance value and the descriptive results, the findings indicate differences in critical thinking performance associated with the instructional approaches. Overall, the results suggest that Cooperative Learning Talking Chips has potential as an instructional technique for supporting students' critical thinking in English speaking activities, particularly in developing their ability to explain ideas and participate in classroom discussions.

Talking Chips may provide an instructional mechanism for these patterns by requiring learners to formulate a contribution before spending a speaking token, listen while peers speak, and wait for equitable turns. These requirements may create opportunities to elaborate claims and compare interpretations. However, the intervention’s success depends on discussion questions, the teacher’s scaffolding, and the quality of reasoning rather than participation alone.

Local evidence is broadly consistent with the importance of active instructional design. Hanan et al. (2020) found that a genre-based reading strategy was associated with differences in reading comprehension when considered alongside critical thinking.

Suadiyatno et al. (2020) reported relationships between contextual teaching, speaking outcomes, and learner anxiety. Hanan and Tawali (2024) discussed cooperative structures in reading instruction. Although these studies addressed different outcomes and settings, they support examining structured interaction as a pedagogical resource.

Other UNDIKMA publications emphasize communication and instructional responsiveness. Hanan and Sugianto (2021) investigated communication strategies in professional interaction, while Hanan et al. (2022) documented lecturer feedback practices. Hanan and Sandiarsa (2023) studied the use of TED Talks in English for Business instruction. Together, these publications illustrate the broader institutional interest in opportunities for meaningful language use, feedback, and learning design, but they should not be interpreted as direct evidence for Talking Chips.

The design imposes several limitations. The classes were nonequivalent, and the experimental group already had a higher pretest mean (36.36 versus 31.32). The variance difference was statistically significant, and the groups had markedly different standard deviations. Moreover, the reported Mann–Whitney test does not clearly identify the score compared. A stronger evaluation would analyze change scores or adjust posttest scores for baseline performance, report effect sizes and confidence intervals, and document scoring-rubric reliability. Thus, the current findings warrant careful rather than categorical causal interpretation.

CONCLUSION

This study investigates the effect of Cooperative Learning Talking Chips on students' critical thinking skills in speaking at SMAN 9 Mataram. The findings show that students in the experimental group demonstrate greater improvement than those in the control group. The experimental group's mean score increases from 36.36 in the pre-test to 41.52 in the post-test, while the control group's mean score increases from 31.32 to 34.16. Furthermore, the Mann–Whitney U test reveals a significance value of 0.001, indicating a statistically significant difference between the groups. These findings suggest that the Talking Chips technique has the potential to support students' critical thinking development in English speaking activities, particularly in interpreting

information, analyzing problems, evaluating arguments, drawing conclusions, and explaining ideas. However, the initial differences between the groups should be considered when interpreting the effectiveness of the technique. Overall, Cooperative Learning Talking Chips can be considered a promising alternative teaching strategy for encouraging active participation, collaborative learning, and critical thinking in English classrooms.

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