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The Effectiveness of Using Mind Mapping Techniques to Improve Students' Speaking Skills

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ABSTRACT

This study concentrated on assessing the effects of the mind mapping technique on enhancing students' speaking skills, tackling the frequent difficulty of articulating thoughts in English. The research was driven by students' difficulties in communication stemming from a lack of motivation, fear of making errors, and limited vocabulary. Conducted as a pre-experimental quantitative study at SMP Negeri 4 Muara Bungo, the research involved 30 eighth-grade students from class VIII 6, selected through cluster random sampling. Data gathering involved a preliminary test, an intervention phase, and a final assessment.. The results revealed a significant improvement in speaking performance, with mean scores increasing from 55. 00 in the initial assessment to 67. 83 in the final assessment.The t-test value of 7.409 exceeded the critical t-value of 2.034 at the significance level, confirming the intervention's effectiveness. Furthermore, the normality test values improved from 2.87 to 7.22, reflecting a total gain of 4.35 in speaking ability. In conclusion, The method of mind mapping was found to be extremely useful in improving the oral communication abilities of eighth graders at SMPN 4 Muara Bungo by providing a structured visual framework that enables students to organize and articulate their ideas with greater confidence.

Key Words: *Speaking Skill, Factors and Students' Problem, Mind Mapping*

ABSTRAK

Penelitian ini berfokus pada penilaian dampak teknik mind mapping terhadap peningkatan keterampilan berbicara siswa, serta mengatasi kesulitan yang sering dialami dalam mengutarakan pemikiran dalam bahasa Inggris. Penelitian ini dilatarbelakangi oleh kesulitan siswa dalam berkomunikasi yang disebabkan oleh kurangnya motivasi, rasa takut melakukan kesalahan, dan keterbatasan kosakata. Dilakukan sebagai studi kuantitatif pra-eksperimental di SMP Negeri 4 Muara Bungo, penelitian ini melibatkan 30 siswa kelas VIII dari kelas VIII 6, yang dipilih melalui pengambilan sampel acak kelompok. Pengumpulan data mencakup uji awal, tahap intervensi, dan penilaian akhir.Hasilnya menunjukkan peningkatan yang signifikan dalam kinerja berbicara, dengan nilai rata-rata meningkat dari 55,00 pada penilaian awal menjadi 67,83 pada penilaian akhir. Nilai t-test sebesar 7,409 melebihi nilai t kritis sebesar 2,034 pada tingkat signifikansi, yang menegaskan keefektifan intervensi tersebut. Selain itu, nilai uji normalitas meningkat dari 2,87 menjadi 7,22, yang mencerminkan peningkatan total sebesar 4,35 dalam kemampuan berbicara. Kesimpulannya, Metode mind mapping terbukti sangat bermanfaat dalam meningkatkan kemampuan komunikasi lisan siswa kelas delapan di SMPN 4 Muara Bungo dengan menyediakan kerangka visual terstruktur yang memungkinkan siswa untuk mengatur dan mengartikulasikan ide-ide mereka dengan lebih percaya diri.

Kata kunci: *Keterampilan Berbicara, Faktor Masalah Siswa, Peta Pikiran*

INTRODUCTION

In English learning, students are expected to master four fundamental skills writing, reading, listening, and speaking. Although all of these skills are important for language learners, speaking is considered the most essential and challenging skill to acquire because it involves more complex aspects than the others. As stated by Soomro (2018), Speaking is regarded as one of the most challenging and intricate language abilites since it necessitates a command of grammatical frameworks, vocabulary, and sociocultural understanding. Several experts have also offered various definitions of speaking.

According to Julius M. Dobson, As cited In Yahya (2013), speaking is described as the process of sharing information using spoken words. This involves the exchange and flow of information between the speaker and the listener during discussions. Additionally, Pebriana (2015), Speaking refers to the process of generating and communicating meaning through both verbal and non-verbal symbols across different contexts.

Based on the interview of pra-observation on January 20, 2023, the teacher (RR) said there is no target in learning for students, it all depends on the learning objectives of each material. At SMPN 4 Muara Bungo, several problems were identified in students' speaking performance. Many students experienced difficulties in expressing their ideas verbally. Even though students possessed ideas to convey, they were often hindered by a lack of confidence stemming from the fear of making errors. Additionally, limited vocabulary mastery and low motivation in learning English were key factors

contributing to these speaking difficulties. Many students do not show interest in speaking English; They are more inclined to use their native language than the target language when engaging in conversations with peers. Furthermore, traditional approaches are frequently utilized by the teacher, particularly in the teaching of speaking, throughout the educational experience.

Regarding speaking skills, they are closely associated with learners' speaking ability, which ideally should meet a certain standard for effective communication. However, some students continue to face difficulties in improving their speaking competence. As a result, they are unable to speak fluently and clearly, and in some cases, they are even unable to produce simple English words. One contributing factor to this problem is the ineffective use of learning strategies or techniques during classroom activities.

Based on the aforementioned problems, the researcher proposes a solution that is expected to address students' difficulties in speaking. The proposed solution involves the implementation of an appropriate learning strategy that can increase students' interest and improve their learning habits. Chamot (2004) defines learning strategies as actions and thoughts used by learners to achieve specific educational goals. This indicates that learning strategies are essential in the learning process, serving as tools to help students achieve specific learning objectives.

In relation to learning strategies or techniques, the researcher identifies an appropriate approach known as "mind mapping." According to Tony Buzan (2013), mind mapping refers to a learning technique designed to enable the efficient and simple structuring of information in the brain so that it can be accessed when required. It is considered a creative, efficient, and powerful method for summarizing learning materials. Mind mapping represents ideas in a visual form, where thoughts are organized in a structured diagram.

For instance, students place a main topic at the center of a page and then extend associated ideas through lines that connect to the central concept. These branches are often color-coded to improve memory retention and make the learning process more engaging. Afterwards, students can use their mind maps as a guide to practice speaking in front of the class.

The researcher will employ the mind mapping technique to examine its effectiveness in improving the speaking skills of eighth-grade students at SMPN 4 Muara Bungo. Mind mapping is recognized as a powerful brainstorming tool that helps students organize their ideas and fosters creative thinking, thereby aiding them in overcoming speaking difficulties. By using mind mapping, students are expected to develop a clearer understanding of the topics they will present orally. During the data collection process, the teacher instructs students to place a topic at the center of a sheet of paper, accompanied by visual prompts such as pictures to stimulate imagination and generate ideas. Subsequently, students develop branches connected to the central image, using different colored inks to make the mind map more engaging and enjoyable. Finally, students are asked to practice speaking in front of the class using the mind maps they have created as a guide.

METHOD

a. Research Design

Research design refers to the procedures a researcher uses to collect and analyze data. According to John W. Creswell (2012), Research design encompasses several procedures within the research process, particularly data collection, data analysis, and report writing. The present study was undertaken to analyze the effectiveness of the mind mapping technique in developing students speaking skills.

The research employed a quantitative method, involving the use of a population and sample, data collection instruments, and statistical techniques for data analysis. This study employed a pre-experimental design with a single group, in which a pretest was administered before the treatment and a posttest was conducted afterward. This design allows for a more accurate measurement of the treatment's effect by comparing students' conditions before and after the implementation of the mind mapping technique.

Table 1. Pre-experiment

Pre-test	Treatment	Post-test
O_1	X	O_2

(Sugiyono,2017)

Explanation:

O_1 :Pretest (student initial test before getting treatment).

O_2 :Posttest (student's final test after receiving treatment)

X :Application of mind mapping learning method

b. Research Site

The research will be conducted at a

junior high school in 4 muara bungo, which is located on Jl. HA. Manap. Sungai Kerjan, Sungai Kerjan Sub- District, Kec. Bungo Dani, Kab. Bungo Prov. Jambi. The reason the researchers chose this location was because junior high school 4 Muara Bungo is one of the schools that is in great demand and because there were problems faced by teachers at the school, namely regarding the lack of motivation and student learning outcomes as well as problems regarding students' speaking abilities that were still lacking, and there had never been a researcher who developed a mind mapping learning method at the school so that researchers interested in doing research.

c. Research Population and Sample

The subjects of this study were eighth-grade students at SMPN 4 Muara Bungo. Grade VIII was divided into seven classes, with class sizes ranging from 29 to 32 students, totaling 213 students.

The selection of Grade VIII students as the research participants was based on the consideration that they are at an intermediate level, where their adaptation to the learning environment is relatively stable.

This experimental research only requires one class to be used as a research sample. Of the seventh classes that were the target of the researcher to be sampled, Class VIII 6 was selected as the sample in this study, which included a total of 30 students. The reason for choosing class VIII 6 and only 30 of the 213 population as a sample was because they followed the sampling technique that the researchers used, namely cluster random sampling.

Table 2. Population

Class	Number of students
VIII 1	30
VIII 2	31
VIII 3	29
VIII 4	30
VIII 5	32
VIII 6	30
VIII 7	31
∑	213

d. Data Collection Technique

1. Pre-Test

The preliminary assessment was carried out to gauge the students' basic speaking skills. At this stage, the researcher administered an oral speaking test without any prior treatment. To put it differently, the assessment was conducted prior to the application of the mind mapping method as a strategy for teaching speaking skills.

2. Post-test

Following the implementation of the treatment, the students were administered a post-test. The post-test followed the same format as the pre-test but focused on a different topic. At this stage, students were required to perform an oral speaking task using mind mapping as a guide. The researcher then analyzed the post-test results to evaluate students' speaking performance after the treatment.

3. Treatment

During the treatment, students are introduced to the concept of mind mapping and taught to use this strategy in their speaking lessons. This treatment is conducted after the students have completed the pre-test.

$$t = \frac{D}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)}}}$$

A paired-sample t-test (dependent t-test) was used to analyze the statistical significance of the differences in pre-test and post-test scores, which is considered an appropriate statistical procedure for a single-group experimental pretest–posttest design.

T = The significant differences
D = The mean of the difference score
∑D = The sum of D scores
$(\sum D)^2$ = The square of ∑D scores
N = The total number of samples

e. Data Analysis Technique

The data gathered through the descriptive speaking test were subjected to analysis using an experimental research approach. In this study, the speaking assessment was conducted with a rating scale to evaluate students' performance. The students' scores were evaluated according to three criteria: fluency, pronunciation, and accuracy of sentences. The researcher employed the following equation to compute the mean score of the students' test results:

$$\frac{The\ number\ of\ students' correct\ answer}{the\ total\ score}\ x\ 100$$

(Gay, 2012)

The mean score of the students was computed using the formula presented below.

$$X = \frac{\sum X}{N}$$

X = Mean
N = Total sample
$\sum x$ = Number of score (grade) the students

Researchers used the formula employed to

assess the increase in students' scores between the pre-test and post-test:

$$P = \frac{X_2 - X_1}{X_1}$$

(Harmer,2007)

Where:
P = Percentage of Improvement
X1 = Pre-tests Mean Score
X2 = Post-tests Mean Score

Tabel 3. Criteria scales of final speaking score

Score	Classification
95-100	Excellent
85-94	Very good
75-84	Good
65-74	Fairly good
0-64	Poor

Tabel 4. The following are the criteria used for hypothesis testing:

Comparison	Hyphotesis	
	H0	H1
t-test < t-table	Accepted	Rejected
t-test > t-table	Rejected	Accepted

RESULT AND DISCUSSION

Result

The results section presents the findings of the data analysis conducted in the study To determine learners' English speaking competence, a pre-test and a post-test were conducted. The students were tested before and after the mind mapping method was implemented to determine their level of speaking ability. The rise in students' post-test scores compared to their pre-test scores showed that the method was effective in enhancing speaking skills.

a. Analysis Testing

Table 5. Percentage and frequency of students' fluency scores on pre-tests

No	Score	Category	Pre-Test	
			Frequency	Percentage
1	96-100	Excellent	0	0%
2	86-95	Very Good	0	0%
3	76-85	Good	0	0%
4	66-75	Fairly good	6	17,65%
5	56-65	Fairly	10	29,41%
6	36-55	Poor	14	52,94%
7	0-35	Very poor	0	0%
TOTAL			30	100%

Table 5 displays the distribution of students' pre-test speaking scores in terms of frequency and percentage. The study involved a sample of 30 students. The results showed that no students reached the categories of excellent, very good, or good performance. In contrast, 6 students (17. 65%) were classified as fairly good, 10 students (29. 41%) fell into the fair category, and 14 students (52. 94%) were categorized as poor. Additionally, no students fell into the very poor performance category.

Table 6. The percentage rate and occurrence of post-test scores in students' fluency.

No	Score	Category	Post-Test	
			Frequency	Percentage
1	96-100	Excellent	0	0%
2	86-95	Very Good	0	0%
3	76-85	Good	4	11,76%
4	66-75	Fairly good	13	38,24%
5	56-65	Fairly	8	35,29%
6	36-55	Poor	5	14,71%
7	0-35	Very poor	0	0%
TOTAL			30	100%

Table 6 shows the percentage rates and distribution of students speaking scores from the post test. The sample consisted of 30 students. The results show that no students achieved the excellent or very good categories. Conversely, 4 students (11.76%) were rated as good, 13 students (38.23%) as fairly good, 18 students (35.29%) as fair, and 5 students (14. 70%) as poor. Additionally, there were no students categorized as very poor.

The results demonstrate that students' speaking abilities showed improvement in the post-test compared to the pre-test, as shown by a higher percentage distribution of post-test scores relative to the pre-test.

Table 7. The average score and variability of the students' fluency.

Indicator	Pre-Test	Improvement
Speaking Improvements	55,00	21,32%
Standard Deviation	12,371	

As noted by H. Douglas Brown (2000), indicators of speaking enhancement are some of the most important elements in assessing students' speaking performance in a classroom setting. Table 7 presents the average scores of students for the pre-test and post-test, highlighting their progress in speaking skills. The average score improved from 55.00 in the pre-test to 67.83 in the post-test.These findings suggest that the mind mapping technique successfully improved students speaking abilities, reflecting a 20. There was a 32% rise in the average scores between the pre-test and the post-testThe higher post-test score indicates a significant improvement in students' speaking skills following the treatment.

Table 8 shows the distribution of t-test and t-table values for the pre-test and post-test.

Variable	t-test	t-table	Descriptive

Speaking (fluency)	7.409	2.034	Significant

Table 8 indicates that the obtained t-value (7.409) is higher than the critical t-table value (2.034). Suggesting a notable enhancement in the speaking skills of eighth-grade students at SMPN 4 Muara Bungo before and after the application of the mind mapping technique.

From the preceding discussion, it can be inferred that the null hypothesis (H0) has been dismissed, while the alternative hypothesis has been acknowledged regarding the mind mapping technique applied with the second-grade students at SMPN 4 Muara Bungo.

a. Hypothesis testing

To determine whether to accept or reject the hypothesis, the investigator conducted homogeneity and normality tests on both groups. The analysis was separated into two sections: the initial section examined the homogeneity and normality tests related to the pre-test data, while the latter section concentrated on the homogeneity and normality tests pertaining to the post-test data. The table below illustrates the results of these assessments.

Table 9. Results of homogeneity and normality tests

PRE-TEST	POST-TEST	H
Homogeneity test of group	Homogeneity test of group	O
1,03 < 1,71	0,48 < 1,71	M
Normality test of experimental group	Normality test of experimental group	O
2,87 < 11,070	7,22 < 11,070	G
		E
		N

The result of hypothesis test

$t_{test} = 2{,}81$

$t_{table} = 1{,}99$

$t_{test} > \ t_{table}\ or\ 2{,}81 > 1{,}99$

It can be concluded that the hypothesis is supported by the findings.

Discussion

The discussion section offers an interpretation of the research findings regarding students' speaking performance. Previous findings by Utami (2009) demonstrated that mind mapping can aid and inspire students in idea generation. This is further supported by the results of the present study, which show that most students agreed that mind mapping improved their speaking skills.

Furthermore, Tony Buzan (2007:4) describes mind mapping as an easy and enjoyable approach for absorbing, organizing, and generating ideas within the mind. Likewise, According to Sugiarto (2004:75), Mind mapping is an instructional approach that is used to summarize educational content and illustrate problems through diagrams or maps, thus improving comprehension.

Additionally, the results of this research show an improvement in the speaking abilities of eighth-grade students at SMPN 4 Muara Bungo throughout the academic year 2023/2024. According to the pre-test results, no students were identified as excellent, very good, or good. Instead, 6 students (17.65%) were classified as fairly good, 10 students (29.41%) as fair, and 14 students (52.94%) as poor, with none falling into the very poor category.

The test results indicate that none of the students achieved excellent or very good classifications. However, 4 students (11. 76%) were deemed good, 13 students (38. 23%) were considered fairly good, 8 students (35. 29%) were assessed as fair, and 5 students were rated as poor, with none categorized as very poor. These results suggest that students' speaking abilities improved in the post-test compared to the pre-test, as shown by a higher percentage of students achieving better classifications after the treatment. Therefore, the findings confirm the effectiveness of the mind mapping method in enhancing students' speaking skills.

The outcomes of this research suggest that employing mind mapping in the educational process has a beneficial impact on enhancing students' speaking abilities, especially regarding fluency. This conclusion is consistent with earlier studies that demonstrate how visualizing concepts through mind mapping assists students in systematically organizing their thoughts, thus aiding in the oral language production process (Davies, 2011). Consequently, this approach functions not only as a visual tool but also as a cognitive technique that promotes the active development of language skills.

From a theoretical standpoint, the effectiveness of the mind mapping approach can be understood through the constructivist theories of Jean Piaget and Lev Vygotsky. Piaget posits that learning is an active endeavor in which individuals build knowledge through their interactions with their surroundings.

This procedure includes processes of assimilation and accommodation, enabling students to incorporate new information into their current cognitive frameworks. Utilizing mind mapping in education promotes independent knowledge construction among

students by organizing and connecting ideas. This leads to a deeper comprehension of the material. Such an organized understanding ultimately enhances students' ability to articulate their thoughts verbally with greater fluency.

According to Vygotsky, learning is closely linked to social context and interaction with the environment. The principles of the Zone of Proximal Development (ZPD) and scaffolding emphasize that students' skills can be best developed through assistance from teachers or fellow students. When implementing mind mapping, students frequently participate in collaborative activities such as discussions and sharing ideas, which promote the social construction of knowledge. The support given during this process functions as scaffolding that enables students to attain a higher level of speaking proficiency.

Additionally, a study that supports these observations indicated that the use of e-mind mapping significantly enhanced students' speaking abilities while promoting positive attitudes toward the language learning experience, as reported by Sharaf and Mohammadzadeh (2025). These findings reinforce the notion that mind mapping not only aids students in organizing their thoughts but also boosts their confidence and fluency in speaking within the context of foreign language learning.

Moreover, mind mapping serves as a cognitive tool that connects thinking and speaking processes. Within the constructivist framework, the use of such tools aids in both absorbing knowledge and expressing ideas through language. Accordingly, the effectiveness of the mind mapping method in enhancing students speaking skills is demonstrated not only through significant empirical findings but also through a robust theoretical framework.

Thus, the combination of empirical results and constructivist theory illustrates that the mind mapping technique is an effective educational approach since it aligns with the principles of active learning, knowledge creation, and social interaction. This supports the claim that improving students' speaking skills through this method is both practical and grounded in strong theoretical foundations.

CONCLUSION

Based on the research findings and subsequent analysis, the mind mapping technique can be regarded as an effective strategy for improving students' speaking skills. This is backed by the results of the statistical examination, where the calculated t-value surpasses the critical t-value (7. 409 > 2. 034), Therefore, the findings provide evidence for accepting H1 (the alternative hypothesis) and rejecting H0 (the null hypothesis). Additionally, the mean score from the post-test (67. 83) exceeds the pre-test score (55. 00), demonstrating a notable improvement in students' speaking skillsTherefore, it may be inferred that the mind mapping technique exerts a significant positive impact on the speaking skills of eighth-grade students at SMPN 4 Muara Bungo.

Nevertheless, this research presents multiple limitations, such as a relatively limited sample size and an exclusive concentration on speaking abilities particularly fluency and a relatively short study duration, which prevents it from fully capturing the long-term effects of implementing this method. Nevertheless, the mind mapping method is recommended for use in classroom instruction as an alternative learning strategy that can help students organize their ideas and improve their speaking fluency. Furthermore, future research is advised to involve a larger and more diverse sample, examine other language skills such as writing and listening, and employ a more complex research design with a longer duration to yield more comprehensive results regarding the method's effectiveness.

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