

The Use of Brain Based Learning Strategies in Increasing Students' Speaking Abilities at SMP Dunia Harapan Makassar



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ABSTRACT: The research aimed to investigate the effectiveness of Brain-based learning in enhancing speaking abilities among students at SMP Dunia Harapan Makassar. Next, the method used on this research was quantitative research method with quasi experimental design. The data of this research was collected through test that consisted of pretest and posttest form. While the population of this research consisted of the seventh-grade students at SMP Dunia Harapan Makassar in academic year 2023/2024 which consisted of three classes or 60 students. Meanwhile, the sample of this research consisted of two classes as experimental class (VII B) and control class (VII A) and each class consisted of 20 students. The results indicated that there was a positive improvement of using Brain-based learning on students' speaking abilities. It was proven by the students' mean score in experimental class (88.25) was significantly increased than the students' mean score in control class (76.5). The result showed that Brain-based learning in experimental class was effective to increase students' speaking abilities. In conclusion, the results supported the effectiveness of Brain-based learning in enhancing language learning outcomes in the improvement of students' speaking abilities among seventh-grade students at SMP Dunia Harapan Makassar. The positive results suggested the potential of incorporating Brain-based learning into language education for improved academic performance.

KEYWORDS: Brain Based Learning, Speaking Abilities, Role play, Graphic Organizer, Tongue Twister

1. INTRODUCTION

English is one of subjects that should be taken in Junior High School level. In mastering the English subject, the students need to learn all abilities in English such as; listening, speaking, reading and writing. Speaking is an interactive process of constructing meaning that involves producing and receiving and also processing information Zaitun et al. (2021). Therefore, prioritizing the development speaking abilities is essential to empower students and ensure their holistic growth principles and success in their educational journey.

The development of speaking abilities holds significant importance in the context of English education for Junior High School students in Indonesia. Effective communication in English opens doors to numerous opportunities in both academic and professional domains. According to Fatim et al. (2020), honing speaking abilities enables students to confidently express their ideas, actively participate in discussions, and deliver presentations. Through interactive classroom activities and exercises that promote speaking practice, teachers can not only improve students' language proficiency but also contribute to their overall confidence and holistic growth as individuals. Therefore, a comprehensive strategy that integrates speaking skill enhancement is essential in fostering well-rounded English language learners in junior high schools.

Despite the recognized importance of speaking abilities, many students face difficulties in these areas. Especially for Junior High School students, speaking abilities development pose significant challenges for students' English language learning. These challenges may arise due to factors like limited exposure to authentic English contexts, insufficient opportunities for meaningful communication, and a lack of engaging language learning resources. To tackle these issues, teachers can adopt innovative teaching strategies or integrating interactive activities focusing on speaking proficiency. By recognizing and addressing the specific needs of Junior High School students, teachers play a crucial role in enhancing speaking abilities, aiming to equip students with the linguistic tools for effective communication and empower them to overcome challenges in their English language journey. To address these issues, the researcher aims to implement a Brain-based learning strategies. By adopting Brain-based learning, teachers can create a dynamic and engaging language learning environment that aligns with how the brain naturally acquires and processes information.

Brain-based learning is effective to enhance speaking abilities development by optimizing the brain's natural learning processes. Teachers can design instructional strategies based on neuroscientific principles to create an engaging learning environment. It focuses on interactive activities that stimulate different parts of the brain and promote holistic cognitive growth. By

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implementing the appropriate strategy of Brain-based learning by Jensen in Rulyansah et al. (2017), teachers can foster an environment that maximizes vocabulary and supports speaking skill development. Brain-based learning leverages the brain's natural tendencies for pattern recognition, associative learning, and multisensory engagement, helping students make stronger connections with new vocabulary and apply it in real-life situations. Thereby, embracing Brain-based learning enables teachers to unlock students' full learning potential, leading to comprehensive educational development.

In actuality, the previous research studies conducted by several researchers provide evidence of the effectiveness of Brain-based learning in improving language abilities such as listening, vocabulary retention, vocabulary achievement and speaking abilities separately. Specifically, according to Khalil et al. (2019) Brain-based learning accelerates the development of students' speaking abilities. This approach involves creating a supportive and engaging environment to reduce stress and incorporate activities like songs and games. Additionally, making learning personally relevant by connecting the content to students' interests and encouraging personal experiences is crucial. Active engagement through hands-on activities, discussions, and interactive tasks that involve movement further enhances their speaking abilities.

The effectiveness of Brain-based learning is further demonstrated through cooperative learning as highlighted by Syahbandi (2018). In this research, Brain-based learning is implemented through cooperative learning. The students are grouped and given opportunities to speak English, promoting active participation, idea development, and cooperation. The implementation involves several steps: forming balanced groups, setting clear objectives, designing structured activities for engagement, fostering a supportive environment, providing feedback and reflection, and incorporating regular practice. These strategies collectively contribute to a learning environment that encourages engagement, collaboration, and language production among students.

Parnell (2018) also conducts research affirming that Brain-based learning enhances the students' speaking abilities. These findings offer teachers specific steps to enhance students' speaking abilities through Brain-based learning. This includes incorporating games and interactive activities to promote active participation and language practice. Additionally, integrating songs and music aids in vocabulary and pronunciation practice. Creating a relaxed and positive classroom atmosphere that encourages risk-taking is important, along with providing opportunities for movement during speaking practice. Foster collaboration and peer interaction through pair and group activities, and utilize authentic and meaningful contexts to make learning relevant. By implementing these strategies, teachers effectively enhance students' speaking abilities through Brain-based learning. In summary, Brain-based learning is effective for enhancing EFL students' speaking skill. By creating a supportive environment, connecting learning to their interests, encouraging active participation, promoting collaboration, and using strategies like cooperative learning, games, and music, teachers can improve students' speaking abilities.

To enhance speaking abilities, the researcher employed three strategies: role play, graphic organizers, and tongue twisters. Role-play involved students assuming specific roles for discussions, while graphic organizers in speaking functioned as visual maps to help overcome information overload. These collective strategies aimed at fostering a comprehensive language learning experience Bhatti (2021). Next, graphic organizer in speaking means a visual map, that help students for overcoming the information load and allow the information and resources to be collected in one place Robillos (2023). Tongue twisters are used to create humor by challenging students to repeat the tongue twister very fast and listening to the funny results Yusnilita & Afifah (2020).

2. PREVIOUS RELATED FINDINGS

The Concept of Brain Based Learning

Definition of Brain Based Learning

Brain-based learning has been defined as calibrating teaching in accordance with the way the human brain naturally learns (Caine & Caine (2014); Kosar and Bedir, 2018). This model of education emphasizes a deep understanding of neuroscience to design instructional strategies that align with how the brain acquires, processes, and retains information. By acknowledging that each individual's brain functions uniquely, teachers can adjust their approaches to accommodate diverse learning styles, strengths, and preferences. Multisensory activities, real-life applications, and problem-solving tasks are incorporated to engage multiple regions of the brain, enhancing memory consolidation and knowledge transfer. By leveraging insights from neuroscience, Brain-based learning stands as a promising model to revolutionize education and optimize the learning potential of every individual.

Brain-based learning has demonstrated its effectiveness in various aspects within the EFL context. Particularly, it has shown positive outcomes in areas like retaining English language knowledge, academic achievement, critical reading, reading comprehension, writing, and oral fluency Khalil et al. (2019). However, to fully harness the benefits of Brain-based learning, it necessitates creating educational environments that align with the brain's natural way of learning. When students are exposed to activities that suit their brains' innate learning processes, it enhances their motivation to learn, succeed, and think creatively Kandasamy et al. (2021). In essence, the success of Brain-based learning relies on providing students with tailored educational experiences that optimize their cognitive potential and foster a passion for learning.

Furthermore, according to Susanti and Adamura (2020), Brain-based learning implementation fosters active learning and empowers students to construct their knowledge in diverse and contextual situations. The advantages of this model, as highlighted

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by Jensen (2008) encompass providing new insights into the workings of the human brain, acknowledging the natural processes of students' brains during the learning journey, cultivating a respectful and supportive learning climate, avoiding undue cognitive strain, and facilitating the integration of various learning models in its application. Particularly, Brain-based learning significantly enhances critical thinking abilities and student engagement, it is also making a promising solution to address various challenges in student education. In summary, Brain-based learning conforms about how students' brains naturally learn. By using neuroscience insights, it improves engagement, critical thinking, and academic achievements for all students, including those in EFL contexts.

The Concept of Speaking

The Definition of Speaking

Speaking English as a foreign language is a challenging skill that requires through mastery of various aspects, including vocabulary, correct pronunciation, grammar, and more Haryudin and Jamilah (2018). When students aim to communicate, they must take into account all these interconnected elements, such as ideas, language usage, grammar, vocabulary, pronunciation, and how to listen and respond to others.

The ability to speak is a natural way of using language, enabling individuals to interact and communicate effectively Syahbandi (2018). Speaking abilities hold a prominent role in foreign language learning, as emphasized by Anjelia and Basid (2020), becoming the principal and most potent purpose of language learning. Teachers and students are expected to engage in conversations to reinforce the information and abilities acquired during their studies.

Speaking plays a pivotal role in developing the communication and interaction competencies of foreign language students and is the second skill to be acquired after listening. Its importance goes beyond passing exams, as EFL students should acquire speaking abilities for social interaction in the outside world Khalil et al. (2019). It serves as a tool to accurately and fluently express oneself and reflects students' ability to effectively interact with others. The significance of speaking the English language is further magnified due to globalization and internationalization, solidifying English's status as a vital world language Parnell (2018).

Speaking is probably the language skill that most language students wish to perfect as soon as possible. Speaking is more frequently used than writing. The main function of spoken language is to socialize individuals. On the contrary to writing, spoken language is produced and processed in real-time, the speaker and hearer have limited time to plan and produce what they want to say and understand what they hear. Speech is generally used in face-to-face conversations; it is temporary, spontaneous, and variable. Spoken language is supported by body languages such as gestures or facial expressions (often called non-verbal communication). We teach speaking as learners consider this particular skill one of the most important and most challenging abilities. Speaking communication is the most common way of building interpersonal relations. Furthermore, speaking is important if we want to get things done, find out information, and give instructions Bhatti (2021).

The Importance of Speaking

Speaking is one of the important skills that students should master in order to communicate in English fluently and clearly. This means that effective speaking also involves a good deal of listening. Speaking takes place everywhere and has become part of our daily activities. Speaking is the most difficult skill to be learned by students, among the four abilities Bhatti (2021). Although not a set curriculum is there in most educational institutions, speaking abilities have been found to be a fundamental skill necessary for a student's success in life. Students often evaluate their success in language learning on the basis of how well they feel they have improved in their spoken language proficiency.

In addition, speaking is one of the most difficult aspects for students to master. The students have to master all components of speaking abilities in order to speak clearly and fluently. Speaking is a productive skill in the oral mode. Like the other abilities, it is more complicated than it seems at first and involves more than just pronouncing words Bhatti (2021).

Essentially, speaking involves the oral use of language to communicate one's ideas, feelings, and thoughts. It is an aspect of language that students must master before being able to speak with others. Moreover, practice in speaking is crucial in the classroom language acquisition process Suvarnaphaet & Suvarnaphaet (2023).

Speaking has a crucial role in the English instruction. Speaking as productive skill produces language through sound which requires us to use vocal track and brain. Moreover, the purpose of speaking is to communicate effectively. In many contexts, people often judge person's language competence from speaking rather than any of the other language abilities. This phenomenon happens because people are aware that speaking has important role in many aspects of life Putri & Refnaldi (2020). Speaking is a prevalent form of linguistic expression utilized worldwide. Speaking serves as a primary means to convey meaning, ideas, opinions, and statements through language. Furthermore, speaking constitutes a productive skill primarily manifested orally. This act of communication entails the generation of various pronunciations, contributing to its dynamic nature Dewi (2023).

Moreover, according to Arini & Wahyudin (2022), one of the English language abilities that students must develop is speaking. It is a useful ability that produces speech to communicate thoughts, information, and meaning when interacting with others. The ability of the students to speak effectively must be supported in the speaking class by effective classroom management and teaching about speaking. Speaking is the intentional utilization of language to communicate thoughts or information, so other

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people can understand you Arini & Wahyudin (2022). However, speaking lessons are meant to help students communicate effectively because this involves more than just correctness but also fluency. Additionally, since English is a foreign language in Indonesia, students may experience challenges speaking English Mandasari & Aminatun, (2020).

The Components of Speaking

Components in speaking are needed to know well in measuring students' ability on speaking skill. The understanding of the constituents of spoken language, as highlighted by Ahmed et al. (2022) is crucial in evaluating students' speaking proficiency. This involves two primary components; accuracy and fluency. Accuracy relates to error-free communication and the assessment of grammatical correctness, ensuring that students can convey their thoughts without mistakes. On the other hand, fluency pertains to the seamless production of words in real-time, without unnecessary pauses or hesitation, resulting in a smooth and natural flow of conversation. According to Suvarnaphaet and Suvarnaphaet (2023), some important ideas about speaking components are as follows:

- a. Vocabulary: This is about knowing and using a variety of words. Using the right words help the speaker to communicate clearly.
- b. Grammar: Grammar is like the rules for how someone organizes words into sentences. When the speakers follow these rules, their speech makes sense and sounds right.
- c. Pronunciation: This is about saying words correctly, including how the speakers stress and intonate them. Good pronunciation helps others understand the speaker better.
- d. Fluency: Fluency means speaking smoothly without hesitating too much. It is about being able to communicate naturally and comfortably.
- e. Precision: This is all about being accurate in how someone uses words, grammar, and sentence structure. It helps the speakers to get their intended meaning across without mistakes.

In other side, according to Brown in Bohari (2020), there are five aspects of speaking abilities as follow:

- a. Vocabulary: One of the linguistic factors in which it is a number of words with the role of combining them to make up the language in speaking. Vocabulary is very essential but it is not the first thing to be considered if speaking takes place, is a very early stage. Vocabulary is a total number of words, which a make up a language.
- b. Grammar: Grammar is the rule in spoken language and written language. The students must obey the rules of grammar to obtain a good result, the students can also find the grammar rule in pronunciation, morphology, and syntax. In speaking ability, sometimes the speaker and the listener do not care about the grammar itself. In fact, it is crucial to have a good grammar in speaking. Good grammar helps speakers convey their ideas effectively, avoiding misunderstandings and confusion. Additionally, proper grammar enhances credibility and professionalism, particularly in formal settings such as presentations, interviews, or professional interactions. It reflects a level of education and attention to detail that can leave a positive impression on others.
- c. Fluency: It shows that people are able to communicate well because it consists of the ease and speed of the flowing speech. Someone who can communicate fluently but she may be able to use the language fluently. Someone can be said fluent if she can require some criteria or categories those are the students can say the words fluently with good pronunciation. The students have many vocabularies so they can say the words fluently and they know what they will say then. They know the rule in the language (grammar). They can put on the word spelling correctly in any situation. It makes the communication among them can be easier to be understood although it does not use grammatical language.
- d. Comprehension: In speaking, the speaker and the listener must have a good understanding so that the conversation certainly requires a subject to respond to speech as well as to initiate it. But in this research, the researcher will call the comprehensibility.
- e. Pronunciation: Pronunciation is the way we make a sound of the language how and where we place the stress and how we use pitch and intonation to show how we are feeling and what we mean. Therefore, it is also very important to be improved, the students must have good pronunciation to give very clear words or speaking that will make others can be easy to be understood.

Brain-based Learning Strategies in Teaching Speaking

Role Play

Role play is an effective technique to develop students' speaking skill as it provides ample opportunities to the students to take roles of different persons. Role-play is a technique that involves students taking on a role and carrying out a discussion with each person playing their role. For example, the local council wishes to introduce a new system and location for dumping waste Bhatti (2021). Role-play, on the other hand, can be quite a simple and brief technique to organize. It is also highly flexible, leaving much more scope for the exercise of individual variation, initiative, and imagination. Role-play is also included in simulation as well (Bhatti, 2021).

Role play can be clearly understood of many aspects like reactions, values, feelings, and attitudes of the person in the same. a number of advantages have been claimed for role-play as a fluency activity if it is performed in pairs or groups rather than one group acting in front of the class. The students choose the role they want to play. Role play is very important in teaching speaking

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because it gives students in opportunity to practice communicating in different social context and in different social roles. Role play gives the opportunity to the students to explore their ability to be more active in teaching and learning process. The students have opportunities for stimulating their speaking abilities which they can perform easily in the front of the class. In other words, role play helps the students to improve their speaking skill (Neupane, 2019).

There are three main types of role play, those are fully scripted, semi-scripted, and non-scripted. In a fully scripted role play, students are provided with every word, and their task is to understand or memorize their roles, often following a model conversation in a textbook. This type is suitable for low-level students. Semi-scripted role play involves a model conversation with missing words that students must fill in with appropriate context. This allows for more flexibility as students can modify the conversation and create their own dialogue. It is ideal for students with upper-beginner to intermediate proficiency levels. The third type, non-scripted role play, provides students with keywords, information, or contexts for less controlled and structured tasks. In this type, students establish mini conversations based on the given elements, fostering creativity and the application of language abilities. Non-scripted role play is practical for middle to advanced level students, allowing them to express their opinions, thoughts, and language on their level in diverse situations. This type encourages problem-solving abilities and offers a more free and structured approach Neupane (2019).

Graphic Organizer

Graphic Organizer, which are also called visual maps, help overcoming the information load and allow the information and resources to be collected in one place. In fact, in the preparation and creation of Graphic Organizer, each group member prepares his/her ideas, then includes them in a common group, and explains each of their ideas. It is possible that similar ideas would come up; these ideas are then grouped or placed close together in order to have idea exchange and integration. However, it is difficult for each member in a group to develop the shared idea in detail, because there is only one common group Graphic Organizer Kurokami & Kojima (2018). With the introduction of technology, digital GOs may make it easier to maintain initial Graphic Organizer for each member and re-arrange the organizers to enable in-depth development of integrated ideas by each group member. Students can also easily display the structure of information which might support them in generating and developing the topic Robillos (2023)

Interestingly, Graphic organizers can improve speaking abilities and even creative abilities. It can assist EFL learners to focus on the important details or keywords, key concepts, and the relationship of the information structured (Abdul Aziz et al., 2018). Graphic organizers are properly regarded as the practical strategy to immediately engage EFL learners and readily link them with content and processes as they are independently working with their patterns in small groups or as a whole class. Graphic organizers are regarded as the instrument of the presentation and modeling the information in various kinds of visual representation and even graphics in favor of getting the demanded EFL learning achievement in Aprianto & Murapi (2020).

Graphic organizers have some functions, namely to clarify and organize important details within some stated categories, organize information in paragraphs, construct meaning, understand the context with association of learners' prior knowledge, and identify conceptual and even perceptual errors in reading activities (Praveen & Rajan, 2013). The use of graphic organizers through direct strategies (cognitive and compensation strategies) and indirect strategies (metacognitive, affective, and social strategies) can facilitate language learning in many ways as well as endeavor to reduce monotony situation of learning. Graphic organizers also can assist the learners to become more confident Abdul Aziz et al. (2018).

Tongue Twister

Tongue twister strategy which consists of a combination of sounds that are hard for the mouth and tongue to manage especially for non-native learners are meaningful tools to improve pronunciation, indeed for further, the ability to speak Yusnilita & Afifah (2020). A tongue twister is a strategy that is aimed to consolidate the English sounds students have learned by creating a game like atmosphere for practice.

A tongue twister is a series of words or a longer piece, like a poem, constructed to be difficult to pronounce properly. Tongue twisters are used to create humor by challenging students to repeat the tongue twister very fast and listening to the funny results. Tongue twisters are also useful in understanding how we process the pronunciation of language Revathy & Ravindran (2016).

The tongue twister is an interesting technique to make students feel enjoy and make the students practice more in English speaking unconsciously. In addition, in learning English speaking by using tongue twister technique make the students more focus on one activity, because by practicing English speaking skill, the students will attract to practice more. Besides that, the tongue twister technique is enrolled as a new technique for the students in improving their speaking abilities Yuniar et al. (2021). Therefore, integrating tongue twisters into English language learning can be beneficial for increasing students' speaking abilities.

3. METHOD

This research utilized quasi-experimental research and employed purposive sampling technique. It was carried out at SMP Dunia Harapan Makassar, South Sulawesi, chosen specifically for its emphasis on enhancing students' speaking abilities. The aim was to evaluate the effectiveness of the Brain-based learning strategies in enhancing students' speaking abilities. The study involved

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all seventh-grade students, totaling 60 individuals from classes VII A, VII B, and VII C. Out of these, two classes were selected to ensure a balanced representation of male and female students, resulting in a sample size of 40 students, 20 students from class VII A and 20 students from VII B. These classes underwent pretest and posttest assessments to compare the impact of the Brain-based learning strategies, with VII B as the experimental group and VII A as the control group.

The main method used to gather data was a vocabulary test created specifically for both the control and experimental groups. The students' vocabulary progress was measured using a specific scoring system. Following Arikunto's (1999) guidelines, the scores were categorized into five levels: excellent (90-100), good (75-89), fair (60-74), less (50-59), and poor (0-49). This systematic assessment approach aimed to accurately gauge the impact of the Brain-based learning strategies on enhancing speaking abilities among junior high school students.

The data collected using pretest and posttest. Before the intervention, a pretest was conducted to assess students' speaking abilities. The speaking pretest comprised a theme that related to job questions covering various aspects of jobs. During the treatment phase, the experimental group received Brain-based learning over three sessions, lasting 2 x 40 minutes each, focusing on English topics aligned with the research objectives. While, the control group continued with their regular instruction without following the Brain-based learning strategies, even it was covering the same content. Following the intervention, a posttest was administered to both groups to evaluate changes in vocabulary achievement. The experiment followed a process where data analysis was the final step after collecting and processing the data using Microsoft Excel. (Sugiyono, 2013; Wu & Alrabah, 2020) highlighted that experimental research focuses on identifying and formulating problems, explaining them through theory about the effect of treatment on results. This involved selecting sample groups, such as an experimental group receiving treatment and a control group, for data analysis aligned with Sugiyono's perspective.

Conversely, the control group, Class VII A, comprising 20 students, was not involved in any Brain-based learning activities. Instead, they were given a set of topics to choose from and learned vocabulary individually without adhering to the Brain-based learning strategies. The aim of this approach was to directly evaluate the influence of the Brain-based learning strategies on students' capacity to enhance their vocabulary proficiency in a productive and efficient manner, discerning the results between those who engaged with the strategies and those who did not.

4. FINDINGS AND DISCUSSION

A. FINDINGS

The Improvement of Students' Speaking Abilities

The students' speaking abilities in using Brain-based learning refers to the four abilities in speaking that consist of students' vocabulary, grammar, fluency and pronunciation. Especially in increasing students' speaking abilities, it used three strategies of Brain-based learning in experimental class, namely; role-playing, graphic organizers, and tongue twister strategies. These kinds of strategies were applied during the learning process. While, in the control class, the teacher used Problem-based learning in learning and teaching process.

Experimental Class

The table below presents the pretest and posttest results for students' speaking abilities in the experimental class across various sub-abilities of speaking:

Table 1. The Mean Score and Gain Score of Students' Speaking Abilities in Experimental Class

No.	Students' Speaking Abilities of Sub-Abilities	Mean		Gain Score (O ₂ -O ₁)
		Pretest (O ₁)	Posttest (O ₂)	
1.	Vocabulary	72	91	19
2.	Grammar	72	87	15
3.	Fluency	64	84	20
4.	Pronunciation	72	91	19
Average		70	88.25	-

In Table 1, the mean scores reveal the students' proficiency in various speaking sub-abilities in the experimental class during the pre-test and posttest. Particularly about the pretest, the analysis indicated that students exhibited a good command of Vocabulary, achieving a mean score of 72. Similarly, their proficiency in Grammar was noteworthy, with a mean score of 72. Conversely, in terms of Fluency, students demonstrated a moderate level of proficiency, obtaining a mean score of 64. On the other hand, the pronunciation showcased a commendable performance with a mean score of 72. The average of students' speaking abilities in pretest is 70.

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On the other hand, especially in posttest, the findings suggest a high level of proficiency in various speaking sub-abilities. Specifically, students displayed an excellent command of Vocabulary, attaining a mean score of 91. Similarly, their Grammar proficiency was quite impressive, achieving a mean score of 87. Furthermore, the students exhibited a good level of Fluency, obtaining a mean score of 84. Additionally, Pronunciation showcased outstanding performance with a mean score of 91. These results collectively indicate a substantial improvement in students' speaking abilities following the intervention in the experimental class. The average of students' posttest in experimental class is 88.25.

In conclusion, the implementation of Brain-based learning in the experimental class generates remarkable improvements in students' speaking abilities. Analysis of pretest and posttest results indicates a significant advancement across various sub-abilities. Notably, the experimental class showcased the highest improvement, with mean scores escalating from 70 in the pretest to 88.25 in the posttest. Particularly impressive was the substantial enhancement in vocabulary, grammar, fluency, and pronunciation, with posttest mean scores notably higher than those of the pretest. These findings underscore the efficacy of Brain-based learning in fostering substantial progress in students' speaking abilities.

Here is the table that show the rate percentage of the frequency on pretest and posttest in experimental class:

Table 4.6 The Rate Percentage of the Frequency on the Pretest and Posttest in Experimental Class (Speaking Abilities)

No.	Classification	Scale	Pretest		Posttest	
			F	P	F	P
1.	Excellent	90-100	2	10%	11	55%
2.	Good	75-89	7	35%	9	45%
3.	Fair	60-74	8	40%	-	-
4.	Less	50-59	3	15%	-	-
5.	Poor	0-49	-	-	-	-
Total			20	100%	20	100%

The table illustrates the distribution of students' performance levels based on their scores in the pretest and posttest, categorized into five classifications. In the pretest, 10% of students achieved an "Excellent" score (90-100), 35% scored in the "Good" range (75-89), 40% fell into the "Fair" category (60-74), and 15% scored in the "Less" category (50-59), with no students falling into the "Poor" classification. Following the intervention or teaching period, the posttest results indicate significant improvement across all categories, with 55% of students achieving an "Excellent" score, 45% in the "Good" range, and no students scoring in the "Fair", "Less", or "Poor" categories. This shift demonstrates a significant enhancement in overall performance, with a substantial increase in the proportion of students achieving "Excellent" and "Good" scores, thereby reflecting the effectiveness of the Brain-based learning employed.

Control Class

The table below presents the pretest and posttest results for students' speaking abilities in the control class across various sub-abilities of speaking:

Table 2. The Mean Score and Gain Score of Students' Speaking Abilities in Control Class

No.	Students' Speaking Abilities Sub Abilities	Mean		Gain Score (O ₄ -O ₃)
		Pretest (O ₃)	Posttest (O ₄)	
1.	Vocabulary	59	75	16
2.	Grammar	63	77	14
3.	Fluency	64	74	10
4.	Pronunciation	69	80	11
Average		63.75	76.5	-

In Table 2, particularly in pretest, the analysis reveals that students exhibited a limited command of Vocabulary, attaining a mean score of 59. Similarly, their proficiency in Grammar was reasonable, with a mean score of 63. Regarding Fluency, students demonstrated a moderate level of proficiency, achieving a mean score of 64. On the other hand, Pronunciation showcased a commendable performance with a mean score of 69. The average of students' speaking abilities in pretest at experimental class is 63.75.

On the other hand, particularly in posttest, the mean scores depict the students' speaking abilities in the control class during the post-test. The analysis reveals that students performed well across various speaking sub-abilities. Specifically, in Vocabulary, students exhibited a commendable proficiency, securing a mean score of 75. Similarly, their proficiency in Grammar was notable, achieving a mean score of 77. Furthermore, the students displayed good Fluency, as indicated by a mean score of 74. Additionally,

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in terms of Pronunciation, students demonstrated a particularly strong performance with a mean score of 80. The average of students' speaking abilities in posttest at experimental class is 76.5.

In summary, the control class, employing a teacher's problem-based learning model, showed moderate to commendable proficiency in speaking abilities across various sub-abilities in the pretest and posttest. However, despite the improvement from pretest to posttest, it is noteworthy that the experimental class, utilizing Brain-based learning, exhibited the most significant enhancement, with an average posttest score of 76.5 compared to the control class's average of 74.75. This highlights the effectiveness of Brain-based learning over traditional Problem-based learning in enhancing students' speaking abilities. The improvement of the students' speaking abilities that are taught by using Brain-based learning above also can be seen at the graphic below:

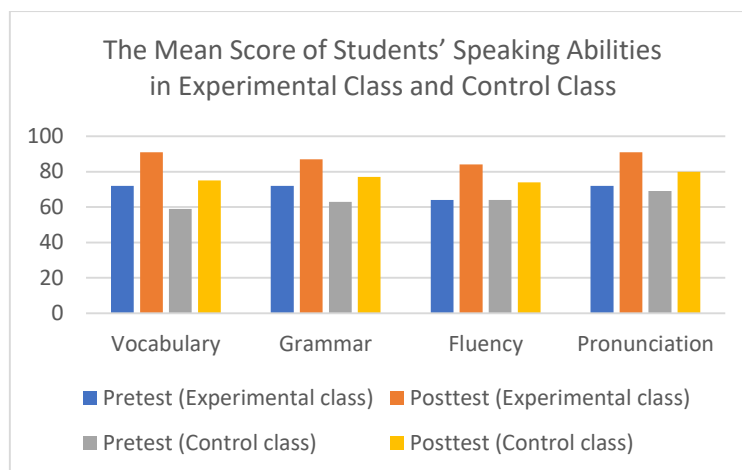


Figure 4.2 The Mean Score of Students' Speaking Abilities in Experimental Class and Control Class

Here is the table that show the rate percentage of the frequency on pretest and posttest in control class:

Table 4.8 The Rate Percentage of the Frequency and on the Pretest and Posttest in Control Class (Speaking Abilities)

No.	Classification	Scale	Pretest		Posttest	
			F	P	F	P
1.	Excellent	90-100	-	-	2	10%
2.	Good	75-89	4	20%	11	55%
3.	Fair	60-74	11	55%	7	35%
4.	Less	50-59	5	25%	-	-
5.	Poor	0-49	-	-	-	-
Total			20	100%	20	100%

The table presents data on the pretest and posttest results of a classification system based on a scale ranging from "Excellent" to "Poor" in control class. The classification scale ranges from scores of 90-100 for "Excellent" to 0-49 for Poor. The pretest and posttest results are displayed in terms of frequency (F) and percentage (P). For instance, in the "Good" category, there were 4 instances in the pretest, accounting for 20% of the total, while in the posttest, there were 11 instances, representing 55%. This pattern repeats across the "Fair" and "Less" categories, with varying frequencies and percentages. Notably, there were no instances of the "Excellent" category in the pretest, but there were 2 instances in the posttest, comprising 10% of the total. Conversely, the "Poor" category had no instances in either the pretest or posttest. Overall, the table provides a comprehensive overview of the distribution of scores across the classification scale, highlighting changes between the pretest and posttest assessments.

B. DISCUSSION

The Improvement of Students' Speaking Abilities

The utilization of Brain-based learning in the experimental class has shown significant improvement in students' speaking abilities compared to the control class without such intervention. Before the intervention, the experimental class exhibited a good command of vocabulary, grammar, and pronunciation, with fair fluency. The data presented showcases the efficacy of Brain-based learning in enhancing students' speaking abilities, particularly evident in the experimental class compared to the control class employing a teacher's Problem-based learning model. In the experimental class, the pretest of mean scores indicated a moderate proficiency in various sub-abilities such as Vocabulary (59), Grammar (63), Fluency (64), and Pronunciation (69), with an overall pretest average

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of 63.75. However, following the intervention, posttest mean scores significantly improved across all sub-abilities, with remarkable enhancements in Vocabulary (91), Grammar (87), Fluency (84), and Pronunciation (91), resulting in a posttest average of 88.25.

Additionally, the distribution of scores in the experimental class shifted notably towards higher proficiency levels, with a substantial increase in the proportion of students achieving "Excellent" and "Good" scores. Conversely, the control class displayed moderate to commendable proficiency in speaking abilities across various sub-abilities, with a posttest average of 76.5. However, the experimental class's posttest mean score of 88.25 compared to the control class's average of 76.5 underscores the significant advantage of Brain-based learning in fostering substantial progress in students' speaking abilities.

The result of this research supported the idea that Brain based learning had a positive effect on students' English learning especially in speaking abilities. It contributes well to teaching and learning of speaking abilities in Junior High School. This was related to previous research in this study. There were some previous researchers who used Brain based learning in improving students' speaking abilities they were Khalil et al. (2019), Fatim et al. (2020), Syahbandi (2018) and Parnell (2018).

According to Khalil et al. (2019), Brain-based learning had facilitated and accelerated the development of EFL speaking abilities of secondary school students. While, according to Fatim et al. (2020), Brain-based learning had positive impact in enhancing students' speaking abilities. They stated that there are various factors influencing the effectiveness of this approach such as incorporating color in learning, using concrete images, playing music during lessons, allowing time for water breaks, and arranging seating. However, according to Syahbandi (2018), The use of Brain-based learning had positive effect toward students' speaking abilities. It is supported by Parnell (2018), who stated that students' speaking abilities were significantly higher after learning English through Brain-based learning.

In other words, Brain-based learning could contribute well for increasing students' speaking abilities. In Brain-based learning, students were divided into several group would have a turn to speak English (Syahbandi, 2018). It meant that cooperative learning was a part of Brain-based learning that could create an active and meaningful learning for students. Especially in increasing the students' speaking components such as vocabulary, grammar, fluency and pronunciation, the researcher used the seven stages of Brain-based learning according to Jensen's perspective (2011). There were some instructional strategies also that could foster the students' speaking abilities such as role play activity, graphic designer and tongue twister. According to Bhatti (2021), Role-play involved students assuming specific roles for discussions, while graphic organizers in speaking functioned as visual maps to help overcome information overload. These collective strategies aimed at fostering a comprehensive language learning experience. According to Robillos (2023), Graphic organizer in speaking means a visual map, that help students for overcoming the information load and allow the information and resources to be collected in one place. Lastly, according to Yusnilita & Afifah (2020), Tongue twisters are used to create humor by challenging students to repeat the tongue twister very fast and listening to the funny results.

In summary, using Brain-based learning significantly improved students' speaking abilities compared to those without the intervention. The experimental class showed great progress in vocabulary, grammar, fluency, and pronunciation, outperforming the control class. This supports previous researches by highlighting the positive impact of Brain-based learning on speaking abilities. Strategies like role play, graphic organizers, and tongue twisters played a key role in creating an engaging learning environment. The findings suggest that Brain-based learning is a valuable approach for enhancing English language learning, especially for Junior High School students at SMP Dunia Harapan Makassar.

5. CONCLUSION

Brain-based learning has a significant enhancement of students' speaking abilities at SMP Dunia Harapan Makassar. It was proved by the students' total mean score of speaking abilities in four sub abilities at posttest, which is improved about 70 to 88.25. However, it is supported by the posttest results that indicated a significant improvement across all categories, with 55% of students achieving an "Excellent" score, 45% in the "Good" range, and no students scoring in the "Fair", "Less", or "Poor" categories.

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