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Exploring numeracy games as an ice-breaking strategy: impact on mathematics learning achievements

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Abstract
Mathematics serves as a fundamental pillar supporting numerous scientific disciplines, yet students frequently perceive it as intimidating, monotonous, and challenging. Indonesian learners achieved merely 366 points in mathematics assessments, representing a decline from previous PISA evaluations between 2015-2018. This performance falls substantially below the standard range of 465-475 points, primarily due to widespread negative attitudes toward mathematics among students. Students' lack of enthusiasm for mathematical studies creates aversion and anxiety, hindering their learning experience. To combat these negative emotions, educators must implement engaging teaching strategies that promote comfort and relaxation during instruction. Ice-breaking techniques represent one effective approach, particularly when incorporating educational games that combine entertainment with learning objectives. Numeracy games offer an excellent ice-breaking method, allowing students to grasp fundamental mathematical principles while enjoying interactive activities. This research investigates how ice-breaker techniques using numeracy games enhance academic achievement among eighth-grade students. The study utilized a pre-experimental design with a single experimental group to evaluate the ice-breaker method's effectiveness on mathematics performance in class VIII.2 at SMP Negeri 2 Patampanua. Employing a quantitative experimental methodology, researchers conducted a one-group pretest-posttest analysis within the same classroom setting.Results demonstrate that ice-breaker strategies incorporating numeracy games significantly improve mathematics learning outcomes for students in the examined class, suggesting this approach effectively addresses traditional barriers to mathematical education.

Keywords: ice breaking technique; learning outcomes; mathematics learning; numeracy games; student mathematics learning outcomes

Abstrak
Matematika berfungsi sebagai pilar fundamental yang mendukung berbagai disiplin ilmu pengetahuan, namun siswa sering menganggapnya menakutkan, monoton, dan menantang. Pelajar Indonesia hanya meraih 366 poin dalam penilaian matematika, yang menunjukkan penurunan dari evaluasi PISA sebelumnya antara 2015-2018. Kinerja ini jauh di bawah rentang standar 465-475 poin, terutama karena sikap negatif yang meluas terhadap matematika di kalangan siswa. Kurangnya antusiasme siswa terhadap studi matematika menciptakan keengganan dan kecemasan, yang menghambat pengalaman belajar mereka. Untuk mengatasi emosi negatif ini, para pendidik harus menerapkan strategi pengajaran yang menarik yang mendorong kenyamanan dan relaksasi selama instruksi. Teknik ice-breaking merupakan salah satu pendekatan yang efektif, terutama ketika menggabungkan permainan edukatif yang

memadukan hiburan dengan tujuan pembelajaran. Permainan numerasi menawarkan metode ice-breaking yang sangat baik, memungkinkan siswa memahami prinsip-prinsip matematika fundamental sambil menikmati aktivitas interaktif. Penelitian ini menyelidiki bagaimana teknik ice-breaker menggunakan permainan numerasi meningkatkan pencapaian akademik di kalangan siswa kelas delapan. Studi ini menggunakan desain pra-eksperimental dengan satu kelompok eksperimen untuk mengevaluasi efektivitas metode ice-breaker terhadap kinerja matematika di kelas VIII.2 SMP Negeri 2 Patampanua. Dengan menggunakan metodologi eksperimental kuantitatif, peneliti melakukan analisis pretest-posttest satu kelompok dalam setting kelas yang sama. Hasil menunjukkan bahwa strategi ice-breaker yang menggabungkan permainan numerasi secara signifikan meningkatkan hasil belajar matematika untuk siswa di kelas yang diteliti, menunjukkan bahwa pendekatan ini secara efektif mengatasi hambatan tradisional dalam pendidikan matematika.

Kata Kunci: *games* numerasi; hasil belajar; hasil belajar matematika; teknik *ice breaking*

1. INTRODUCTION

The quality of Human Resources (HR) has an important role in ensuring the sustainability of a nation's development. Quality education can produce human resources who are creative, broad-minded, and able to compete at both national and international levels. So it can be said that the quality of human resources is closely related to the quality of education (Jumrah et al., 2022).

Education is a process that aims to direct students to adapt optimally to their environment (Adriyanti et al., 2021). Through education, it is hoped that it will be able to produce students who can play a good role in social life. This is in accordance with the main aim of education, namely as a medium for developing potential and educating humans so they are ready to face life in the future (Jumrah & Anggriani, 2022).

The best way to realize these educational goals can be done through implementing the best and most focused education system by adapting to the current situation. Organizing a quality, effective, efficient and comprehensive education system requires careful planning to realize it and through a disciplined, rigorous and planned learning process which is then evaluated and followed up (Jumrah et al., 2023). Learning techniques that are varied, inspiring, not monotonous and fun must be created. Furthermore, it is hoped to produce quality output or human resources that are highly competitive and in line with the needs of this nation as well as the goals of education in general (Jumrah, 2017).

The quality of education can be seen from the quality of learning in the classroom (Midianti & Zainil, 2021). Quality learning is reflected in the activities and learning outcomes of students. Educational goals must be reflected in learning objectives because that is what will be achieved through the learning process. One subject that almost covers all educational goals is Mathematics (Azka, 2019). This is because Mathematics is the Queen of Knowledge, which makes Mathematics have an important role in the

development of various other fields of science. Even in everyday life we can never be separated from mathematics (Tahir & Jumrah, 2023).

Realizing the importance of mathematics in life, efforts to improve mathematics learning outcomes at every level of education always receive serious attention. However, even though it has a very important role in various life contexts, in reality mathematics is often considered a scary, boring, and even difficult to learn subject. The average mathematics ability of Indonesian students will decline in 2022. Through the 2022 PISA scores, Indonesian students obtained a mathematics ability score of 366 points, a decrease compared to the 2015-2018 PISA assessment results. This score is also far below the average score of OECD member countries, which is in the range of 465-475 points (Hanggrahini, 2021). This is because mathematics is still given a negative perception by most students. The low interest of students in studying mathematics causes feelings of dislike and discomfort in studying mathematics. This can even affect their mathematics learning activities and results (Erviana et al., 2023). To overcome feelings of discomfort and dislike towards mathematics subjects, learning techniques are needed that can make students feel more comfortable and relaxed during the learning process, namely the ice breaking learning technique (Anwar, 2018).

Ice-breaking strategies are serving as essential tools to enhance student engagement and motivation. These strategies, which include various interactive activities, are designed to create a comfortable and dynamic learning environment, thereby facilitating social interaction and reducing anxiety among learners (Arias et al., 1999). Katni et al (2022) in their research indicates that ice-breakers can significantly improve students' concentration and information retention by refreshing their cognitive state, making learning more enjoyable and effective. Furthermore, the application of ice-breaking techniques is particularly beneficial for adult learners, who often arrive with preconceived notions about education; these strategies help to build rapport and foster a sense of community, which is crucial for effective learning (Anwar, 2018). Additionally, the implementation of ice-breaking activities requires careful planning and adaptability from educators, ensuring that they align with learning objectives and cater to diverse student needs (Erviana et al., 2023). Overall, the theoretical foundation of ice-breaking strategies underscores their role in promoting a positive learning atmosphere, enhancing participation, and ultimately improving educational outcomes.

Ice-breaking strategies serve as cognitive preparatory mechanisms, comparable to physical warm-up routines in athletic training. As muscular systems require gradual activation to prevent dysfunction, the human brain benefits from structured pre-learning activities that establish optimal conditions for knowledge acquisition. Students who experience reduced anxiety and elevated positive affect exhibit significantly improved capacity for processing and retaining complex mathematical content. The establishment

of favorable emotional states creates neurological conditions conducive to effective information encoding and long-term memory formation (Asmarani et al., 2023).
Ice breaking is very important to refresh the learning atmosphere, eliminate boredom, and raise students' enthusiasm for learning (Insani et al., 2023). When students experience boredom and boredom with lessons, they need refreshment so they can reactivate their potential and ability to absorb lesson material well (Pratama et al., 2021).

Ice breaking is a simple, light and short game or activity that aims to change a stiff, cold or boring atmosphere in learning to make it more enjoyable (Ramlah et al., 2022). There are various games that can be used when performing the ice breaking technique (Khodijah, 2023). One of them is through numeracy games so that students not only play but also help them understand simple mathematical concepts (Erviana et al., 2023).

Despite the widespread recognition of ice breaking techniques in educational settings, several significant gaps exist in current research and practice. First, while numerous studies have explored ice breaking activities in general educational contexts, there is limited empirical evidence specifically examining the effectiveness of ice breaking techniques in mathematics education, particularly in Indonesian secondary school settings. Pratama et al. (2021) in their research focuses on general teaching methods without specifically addressing the unique challenges faced by students with mathematics anxiety and negative perceptions toward the subject.

Although numeracy games have been identified as potential tools for mathematics learning, there is insufficient research investigating their systematic integration with ice breaking techniques as a comprehensive pedagogical approach. Previous studies have predominantly examined these elements in isolation rather than as a combined intervention strategy. Additionally, the majority of existing research lacks rigorous experimental designs with proper control groups and quantitative measures to assess learning outcomes effectively (Juwiantho & Sidarta, 2024).

This study contributes several novel elements to the existing body of knowledge in mathematics education. First, it introduces a unique combination of ice breaking techniques specifically integrated with numeracy games, creating a dual-purpose intervention that addresses both student engagement and mathematical conceptual understanding simultaneously. Unlike previous research that treats these elements separately, this study develops a comprehensive framework that leverages the motivational benefits of ice breaking while incorporating structured mathematical learning through gaming. This study establishes a replicable model for integrating ice breaking techniques with subject-specific learning objectives, potentially serving as a foundation for future research in other STEM subjects and educational contexts.

Based on the description above, researchers are interested in conducting research on the role of ice breaking learning techniques through numeracy games in increasing students learning outcomes.

2. METHOD

This type of research is pre-experimental, namely an experiment involving one class as an experimental or trial class with the aim of finding out the effect of the Ice Breaker learning technique on the mathematics learning outcomes of class VIII.2 students at SMP Negeri 2 Patampanua. Therefore, this research is pre-experimental research.

The selection and structuring of numeracy games in educational contexts are crucial for aligning with learning goals and ensuring cultural relevance. For instance, the Gasing Mathematics approach integrates traditional games, such as poh-pohan and gowak-gowakan, to create an interactive learning environment that enhances mathematical understanding.

This research approach uses a quantitative type of experiment carried out in class VIII.2 at SMP Negeri 2 Patampanua. The research used was a pre-experimental approach. The research design uses a pre-experimental design with a one-group pretest-posttest form. The population in this study was all 143 class VIII of SMP Negeri 2 Patampanua, totaling 5 classes. The sample in this study was class VIII-2 as a pre-experimental class. Of the entire class VIII of SMP Negeri 2 Patampanua there are 143 students.

The research instrument consisted of a mathematics learning achievement assessment tool implemented through a pre-test/post-test design to evaluate the effectiveness of ice-breaking techniques on student learning outcomes. Content validity was established through expert review, which confirmed the appropriateness and alignment of test items with predetermined learning objectives and curricular standards.

The data collection technique used in this research is Learning outcome data was obtained from the pretest before treatment was given and the posttest which was carried out at the end of the research meeting. Data about the implementation of learning is collected using observation sheets. Data about student activities is used using observation sheets.

Learning was carried out over four meetings. The first meeting provides material and provides a pretest. The second and third meetings are used as treatment (action). The fourth meeting was a posttest. Each meeting is held within 3 x 35 minutes. The time used is adjusted to mathematics learning at the school concerned. The details of the procedure are as follows:

a. Pretest

Pretest activities are carried out before treatment with the aim of knowing students' math abilities and learning outcomes before being given treatment in the form of Ice Breaking through numeracy games activities.

b. Providing Treatment

Treatment was provided in the form of the Ice Breaking technique through numeracy games during the teaching and learning process activities which included educational games, playing and singing and shouting, which was carried out in class twice.

c. Posttest

At this stage, students are given a number of structured questions to compare students' mathematics learning outcomes after being given treatment in the form of Ice Breaking activities.

The design used in this research was One-Group Pretest-Posttest. The design was used because this research only involved one class, namely the experimental class which was carried out without a comparison class but was given an initial test and a final test in addition to the treatment.

The research procedure consists of 3 stages, namely the preparation stage, the implementation stage, and the final stage.

a. Preparatory stage

The preparation stage in this research includes:

1) Consultation with teachers
2) Make initial observations
3) Create learning tools such as lesson plans and assignments for students.
4) Make observation sheets to find out student activities.
5) Make a learning results test sheet in the form of essay questions.

b. Implementation stage

The implementation stages in this research include:

1) Give a pretest at the beginning of learning (first meeting)
2) Implementing the Ice Breaking Technique
3) Carry out observations of student activities during the learning process.
4) Provide tests in the form of essay questions for evaluation (posttest).

c. Completion stage

At the completion stage, several steps are carried out as follows:

1) Processing research data,
2) Analyze and discuss research data,
3) Make conclusions.

This research is pre-experimental research which aims to see the effect of a treatment on a sample group. Because there is no control group, the data analysis in this study is more descriptive and comparative in nature. The data analysis technique used is the Paired t Test. This test is used to compare the averages of two groups of paired data, for example

scores before treatment (pre-test) and after treatment (post-test) in one sample group. The goal is to find out whether there is a statistically significant difference between the two scores. Data analysis was carried out using SPSS.

1. Descriptive Analysis

This analysis is carried out through calculations using logic to draw logical conclusions regarding the data analyzed. This analysis discusses research items in terms of criteria with respondent identity (characteristics) and research variables. Thus, it can be said that this descriptive analysis is intended to carry out data analysis in accordance with the classification of respondents into percentages.

2. Hypothesis test

Testing the research hypothesis regarding differences in learning outcomes for class VIII.2 students in the mathematics subject at SMP Negeri 2 Patampanua before and after using the Ice Breaker technique, a t-test can be carried out using the paired sample t-test in the Statistical Package for Social Science program (SPSS). The criteria for hypothesis testing are that the null hypothesis (H-0) is accepted if the t_count value is smaller than the t_table value at the 5% significance level with a certain degree of freedom (N-1) and conversely the alternative hypothesis (H1) is accepted if the t_count value is greater than the t_table value at this level. 5% significance with certain degrees of freedom (N-1).

Paired Sample T-Test was used to see the difference in test results before and after being applied using the Ice Breaker technique in class VIII.2, so the data was analyzed using Paired Sample T-Test. The data was analyzed using the Paired Sample T-Test using the Statistical Package for Social Science (SPSS) program. Then, the t_table was first determined to determine the selected hypothesis. For a paired sample t test, the df (degree of fredom) value is the number of samples minus one or n-1. The possible research results are as follows:

If the calculated t_value < t_table value then the null hypothesis (H_0) is accepted and the alternative hypothesis (H_1) is rejected, meaning that the application of the Ice Breaker technique does not affect students' mathematics learning outcomes.
If the t_count value > t_table value then the alternative hypothesis (H_1) is accepted and the null hypothesis (H_0) is rejected, meaning that there is an influence of the use of the Ice Breaker technique on students' mathematics learning outcomes.

3. RESULT AND DISCUSSION

3.1 Result

The results of this research show the effect of applying the Ice Breaking Technique through numeracy games on student learning outcomes. To show this, data analysis techniques were used, namely descriptive statistical analysis and inferential statistical analysis. Descriptive statistical analysis was used to describe the Mathematics learning

outcomes of Class VIII.2 students at SMP Negeri 2 Patampanua. Meanwhile, inferential statistical analysis was intended to test the research hypothesis by analyzing the difference between posttest scores and pretest scores.

1. Descriptive Statistical Analysis

a. Descriptive Learning Results (Pretest) for mathematics Class VIII.2 at SMP Negeri 2 Patampanua

Mathematics learning results for class VIII.2 Before applying the Ice Breaking Technique (pretest), the following data were obtained:

Table 1. Descriptive Statistics of Mathematics Learning Results (Pretest)

Statistics	Value
Mean	48,61
Score Range	31
Median	50,00
Mode	38
Standard Deviation	7,899
Variance	62,396
Minimum	31
Maximum	62

b. Descriptive Learning Results (Pretest) for mathematics Class VIII.2 at SMP Negeri 2 Patampanua

Mathematics learning results for class VIII.2 after applying the Ice Breaking Technique (pretest), the following data were obtained:

Table 2. Descriptive Statistics of Mathematics Learning Results (Posttest)

Statistics	Value
Mean	73,68
Score Range	11
Median	73,00
Mode	73
Standard Deviation	3,289
Variance	10,819
Minimum	71
Maximum	80

c. Hypothesis Testing Results (t-test)

Hypothesis testing in this research was carried out using the t-test taking into account the research hypothesis that had been previously formulated, namely:

Null hypothesis (H0): There is no significant effect of the application of the Ice Breaker technique on student learning outcomes in mathematics class VIII.2 SMP 2 Patampanua.

Alternative hypothesis (H1): There is a significant influence of the application of the Ice Breaker technique on student learning outcomes in mathematics class VIII.2 SMP 2 Patampanua.

Based on the paired sample test sig (2.tailed) table, a value of 0.000 is obtained. The value obtained is smaller than the 0.05 significance level, which means that there is a significant difference in the 0.05 probability of class VIII.2 learning outcomes. This shows that the application of the Ice Breaker technique has a significant positive influence on student learning outcomes.

The paired sample t-test was carried out using SPSS version 25. The paired sample t-test was said to be significant if the sig value was <0.05 then the t and sig (2-tailed) values were <0.05. Furthermore, it is said to be not significant if the sig value is > 0.05 then the t and sig values (2-tailed) are > 0.05.

The results obtained from class VIII.2 are that the significance section is smaller than 0.05, namely 0.000 < 0.05, so the next step taken by the researcher is paying attention to the t and sig values (2-tailed), namely 0.000 < 0.05, meaning there is significant differences during the pretest (before treatment) and posttest results (after treatment). Apart from that, based on the data that has been obtained, the t_count value obtained is -17.213. Comparing the t_calculated value with t_table at the 5% significance level for df (N-1) = 27. The t_table value for the 5% significance level is 2.052. The value of t_calculated is located in the Ha reception area with the t_calculated price being an absolute value, so it cannot be seen (+) or negative (-). So H0 is rejected, where t_count > t_table or t_count (17.213) > t_table (2.052) then Ha is accepted.

Based on the problems stated previously which state that 1. How to apply the Ice Breaking technique through numeracy games to the mathematics learning outcomes of class VIII.2 students at SMP Negeri 2 Patampanua 2. Is the influence of the Ice Breaking technique through numeracy games significant on the mathematics learning outcomes of class VIII.2 at SMP Negeri 2 Patampanua

Based on the researcher's observations during the experiment, students became more interested in participating in the teaching and learning process after being given the Ice Breaking technique through numeracy games. Researchers applied the Ice Breaking technique through numeracy games in three stages, namely initial activities, core activities, closing activities. This research also shows that when teachers and students apply ice breakers in class in core learning activities, it has an impact on returning student focus and encouraging students to follow the process. learning, so that when students return to focus on the learning material that day they will be delivered well and learning will be effective and optimal. The application of ice breakers can also be carried out spontaneously, looking at the condition of the class. Ice breaking like this can be done at any time by looking at the conditions and situations that occur during the learning

process. Students pay more attention to researchers when delivering material using the lecture method.

If we compare the results of the students' pretest and posttest mathematics, a very significant difference is obtained. This can be seen in the students' average score of 48.61. Before being given treatment, the average score of student learning outcomes was equal to the percentage level of pretest learning outcomes, namely very low 78.6%, low 6%, medium 0%, while for the high and very high categories 0%. This shows that the learning outcomes before The application of the Ice Breaking technique through numeracy games is classified as very low.

After using the Ice Breaking technique through numeracy games in learning, the students' average score increased to 73.68 with learning outcomes levels namely very high 0%, high 10.7%, quite 89.3% low 0%, and very low 0% So it can be concluded that after applying the Ice Breaker technique, student learning outcomes can be categorized as high. A good learning process is not only measured by the final score obtained by students. A good learning process can also be seen from how students are active in the learning process while applying the Ice Breaking technique through numeracy games. Based on the analysis of the results of observations of student activity in learning during the application of the Ice Breaking technique, it can be obtained that during the 4 meetings held with the criteria determined by the researcher, namely that students were active in the learning process if the number of active students was ≥ 75% for both indicator and average student activity. Average student activity, from the results of observations, the average percentage of students actively carrying out the expected activities reached 89.09%, so it can be concluded that student activity in the mathematics learning process using the Ice Breaking technique through numeracy games has reached the "Very Good" criteria. Based on the results of inferential statistical analysis using the t test formula, it can be seen that the calculated t value is 17.213. With a frequency (dk) of 28 - 1 = 27, at a significance level of 0.05, tTable = 2.052. Because t count > t table at a significance level of 0.05, the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted, which means that there is an influence in applying the Ice Breaking technique through numeracy games on the mathematics learning outcomes of class VIII.2 students at SMP Negeri 2 Patampanua.

3.2 Discussion

The results of this study indicate that the application of the Ice Breaker technique, particularly through numeracy games, has a significant positive impact on the mathematics learning outcomes of class VIII.2 students at SMP Negeri 2 Patampanua. The findings align with the research hypothesis that employing interactive and engaging teaching strategies can enhance both academic performance and student engagement.

The statistical analysis confirms the efficacy of the Ice Breaker technique, as evidenced by the paired sample t-test results. A t calculated value of 17.213, which significantly exceeds the t table value of 2.052, strongly supports the rejection of the null hypothesis (H0) and acceptance of the alternative hypothesis (H1). This finding indicates a substantial improvement in students' post-test scores compared to their pre-test scores, with the average score rising from 48.61 to 73.68.

The distribution of student performance categories also highlights this improvement. Before applying the Ice Breaker technique, the majority of students (78.6%) fell into the "very low" category. Post-treatment, no students were categorized as "very low," and 10.7% achieved "high" levels of learning outcomes. This shift underscores the effectiveness of the Ice Breaker technique in addressing students' learning challenges and boosting overall achievement levels.

In addition to improved test scores, the study revealed a notable increase in student engagement during the learning process. Observational data showed that 89.09% of students actively participated in learning activities during the Ice Breaker sessions, achieving the "Very Good" criterion for student activity. This high level of engagement suggests that the Ice Breaker technique effectively captures students' attention and sustains their focus on the learning material.

This outcome is consistent with theories of active learning, which emphasize the importance of student-centered approaches to maintaining motivation and enhancing understanding (Lestari et al., 2023). By breaking the monotony of traditional teaching methods, the Ice Breaker technique creates a dynamic classroom environment that encourages participation and reinforces key concepts through enjoyable activities (Kurniasih et al., 2018).

The findings highlight the versatility of the Ice Breaker technique. It can be applied in various stages of the learning process—initial, core, and closing activities—and can be adapted spontaneously to suit classroom conditions (Lodong & Seleky, 2023). This adaptability makes it a valuable tool for teachers seeking to create engaging and effective learning experiences (Puspita, 2023).

Moreover, the technique fosters a positive classroom atmosphere, enabling students to reset their focus and approach the learning material with renewed enthusiasm (Muhtarom et al., 2022). Such benefits are especially critical in subjects like mathematics, where students often struggle with motivation and confidence (Novera et al., 2021).

The results align with prior research emphasizing the role of innovative teaching strategies in improving learning outcomes (Wahyuni & Rambe, 2023). Ice Breakers, as a subset of active learning strategies (Sinaga et al., 2023), have been shown to reduce student anxiety (Nuryana & Sunardin, 2020), build rapport (Sa'diyah & Suhaimy, 2023),

and facilitate a deeper understanding of subject matter (Asmarani et al., 2023). The present study extends these findings by demonstrating the technique's specific impact on mathematics learning in a middle school context.

Numeracy games significantly enhance learning by fostering motivation, engagement, and conceptual understanding while reducing anxiety. These games create interactive environments that encourage exploration and problem-solving, as evidenced by a study where seventh-grade students showed improved numeracy skills and high engagement levels, with 95.2% finding the game stimulating (Juwiantho & Sidarta, 2024). Additionally, games facilitate the construction of mathematical concepts through social interactions, allowing students to discuss and reflect on their learning, which is crucial for developing understanding. Game-based learning also decreases anxiety, particularly when games promote collaboration and social interaction, although the effectiveness varies between digital and non-digital formats (Hanggrahini, 2021). Overall, numeracy games serve as effective tools for enriching mathematical education.

4. CONCLUSION

The significant improvements in both learning outcomes and student engagement observed in this study affirm the effectiveness of the Ice Breaker technique as a pedagogical tool. Teachers are encouraged to incorporate such techniques into their practice, especially in subjects where students face difficulties in maintaining focus and achieving satisfactory results.

Future research could explore the long-term effects of Ice Breakers on student learning and investigate their applicability in diverse educational settings. Additionally, examining the interaction between the Ice Breaker technique and other instructional strategies could provide further insights into optimizing teaching practices.

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