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THE EFFECT OF POSTER-BASED ICE BREAKING ON STUDENTS' LEARNING OUTCOMES IN SCIENCE SUBJECTS FOR GRADE IV AT MI NW SURABAYA IN THE 2024/2025 ACADEMIC YEAR

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ABSTRACT

This study investigated the effect of poster-based ice-breaking activities on students' learning outcomes in science subjects for Grade IV at MI NW Surabaya in the 2024/2025 academic year. The research aimed to determine whether implementing ice-breaking techniques using poster media could significantly enhance students' understanding and performance in science. A quantitative approach was employed, utilizing a quasi-experimental design with a post-test-only control group structure. Thirty Grade IV students were randomly assigned to experimental and control groups. The experimental group received poster-based ice-breaking interventions, while the control group underwent conventional learning. Data were collected through tests, observations, and documentation. Instrument validity and reliability were confirmed through point-biserial correlation and Cronbach's alpha analysis. Statistical analysis included normality, homogeneity, and t-tests. The findings revealed a significant difference between the experimental and control groups, with the experimental group achieving higher post-test scores. The results suggest that poster-based ice-breaking activities positively impact students' science learning outcomes. This study highlights the potential of integrating creative media with interactive techniques to foster a more engaging and effective learning environment in science education for elementary students.

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INTRODUCTION

The learning model is a pattern used as a guide for planning learning in the classroom and tutorials. According to Arends, a learning model refers to the approach that will be used, including learning objectives, stages in the learning process, the learning environment, and classroom management. A learning model can be defined as a conceptual framework that depicts systematic procedures for organizing learning experiences to achieve educational goals (Rudi Susilana, 2016). Learning is not merely the accumulation of knowledge but a mental process occurring within the individual. In simple terms, learning refers to a continuous interaction between development and life experiences, with the teacher's conscious effort to facilitate students' learning (Al-Tabani, Trianto, 2014). Psychologically, learning is seen as a process of change, namely the modification of behavior as a result of interaction with the environment to fulfill life needs (Slameto, 2013).

Ice breaking refers to activities designed to "break the ice," typically used in training to reduce awkwardness among participants, enabling them to interact with each other more

comfortably. Ice breaking activities are intended to create a relaxed and friendly atmosphere, making it easier for students to absorb the lesson. Students tend to receive lessons better in an environment that is not tense, but rather relaxed, comfortable, and friendly (Algivari, Annisa, and Dea Mustika, 2022).

The use of ice-breaking activities offers several benefits in the learning process: 1) Encourages students to discuss and collaborate in groups; 2) Trains systematic thinking and creativity in problem-solving; 3) Develops decision-making skills; 4) Boosts self-confidence; 5) Trains concentration and the ability to act without fear of making mistakes; and 6) Optimizes students' thinking and imagination. Ice-breaking activities can be used both at the beginning and the end of lessons (Felik Sad Windu Wisnu Broto, 2020).

The term "media" comes from the Latin word medium, which means an intermediary or a channel through which communication occurs (Arsyad, Azhar, 2015). In educational contexts, media are tools or channels used to facilitate communication between the message sender and receiver. Media include films, television, diagrams, printed materials, computers, instructors, and other tools (Army Megawati Reta, 2017). Posters, as a form of visual media, combine strong design elements, colors, and messages aimed at capturing attention and leaving a lasting impression (Hasrian Rudi Setiawan & Nurzannah, 2018). Posters are characterized by their simplicity, clarity, and focus on delivering a key message (Elly Lanti, 2017).

The use of posters as media in education can serve two purposes: 1) As a learning material during teaching sessions, helping the teacher explain the lesson to students in a more engaging way; and 2) As motivational tools, reminders, or propaganda used outside of formal lessons, posted around the classroom or school to encourage positive actions and instill social or religious values (Daryanto, 2016).

Science education (IPA) requires students to engage in scientific thinking and activities related to the natural world. Science subjects involve not only memorization but also the development of critical thinking skills to address real-life problems (Suwisnawati Gowasa, Harahap, F., and Suyanti, R.D., 2019). As per the 2013 curriculum, thematic learning emphasizes active student participation, with the teacher acting as a facilitator (Nurita et al., 2018).

Previous research has explored various teaching strategies, including ice-breaking activities and media use in learning, but few studies have specifically examined the effect of poster-based ice-breaking techniques on student learning outcomes in science subjects. This gap in research is important to address, particularly in the context of elementary education, where engaging methods can significantly impact students' learning outcomes.

This study introduces a novel approach by combining ice-breaking activities with poster media to enhance student learning outcomes in science. While ice-breaking and media use have been studied separately, few studies have integrated these elements in a cohesive way to enhance learning in a specific subject like science.

This research aims to investigate the effect of poster-based ice-breaking activities on students' learning outcomes in science subjects for grade IV at MI NW Surabaya in the 2024/2025 academic year. Specifically, the study seeks to answer Does the use of poster-based ice-breaking activities significantly affect students' learning outcomes in science?. The objective of this research is to determine whether implementing poster-based ice-breaking activities can improve students' understanding and performance in science lessons.

The findings of this research could have significant implications for both theory and practice. Theoretically, the study will contribute to the development of learning models that emphasize social interaction and the effective use of media in education. Practically, this research

could guide teachers in designing more engaging and effective lesson plans, incorporating ice-breaking techniques and visual media to enhance student participation and learning outcomes.

METHOD

The research utilized a quantitative approach, which is based on the philosophy of positivism. This method is employed to study specific populations or samples, with sampling typically done randomly. Data collection used research instruments, and the data analysis was statistical and quantitative, aimed at testing established hypotheses. This study was experimental in nature, meaning it sought to examine the effects of one variable on another under controlled conditions. Specifically, the experimental method was used to analyze the impact of ice-breaking activities based on poster media on the science learning outcomes of Grade IV students at MI NW Surabaya, Sakra Timur District.

The research design employed was a quasi-experimental design, specifically the post-test-only control group design. In this design, both the experimental and control groups were randomly selected. However, no pre-test was administered to either group, as they were considered to be equivalent prior to the treatment. The design was depicted as follows:

Table 1. a quasi-experimental design

Group	Treatment	Posttest
Experimental	X1	O1
Control	X2	O2

Where:
O1 = Post-test for the experimental group
O2 = Post-test for the control group
X1 = Treatment using ice-breaking activities based on poster media
X2 = No special treatment (conventional learning)

The research was conducted in Grade IV at MI NW Surabaya, as the researcher observed that in this school, particularly in the 2024/2025 academic year's science lessons, the use of learning media was still limited. The study was carried out from February to March 2025.

In terms of variables, the study involved three variables: two independent variables and one dependent variable. The independent variable was the ice-breaking activities based on poster media, which was hypothesized to affect the dependent variable, the students' learning outcomes. The research population consisted of all 166 students at MI NW Surabaya, with a sample size of 30 Grade IV students randomly selected for the study.

Data collection methods included observation, testing, and documentation. Observations were made to monitor the role of the teacher in shaping students' character in science lessons. The test, specifically a post-test, was used to measure the effect of the ice-breaking treatment on the students' science learning outcomes. Documentation was used to gather written data and information related to the research topic. The research instruments consisted of multiple-choice tests. The scoring system involved awarding 1 point for each correct answer and 0 points for incorrect answers. The formula for calculating the test score was: Score = (Number of Correct Answers / Total Questions) × 100. The data analysis involved categorizing the data based on variables and respondents. Statistical tests were used to verify the hypothesis that the ice-breaking activities based on poster media had a significant impact on students' science learning outcomes.

For instrument testing, validity and reliability were assessed. The validity test aimed to determine whether the research instrument accurately measured what it was supposed to measure. Reliability was tested using Cronbach's alpha to ensure consistency in measurements. The

hypothesis testing included normality, homogeneity, and t-tests. The normality test checked if the data followed a normal distribution, the homogeneity test ensured the variances between groups were similar, and the t-test compared the means of the experimental and control groups to determine if there were significant differences.

The hypothesis for the study was that the ice-breaking activities based on poster media would positively affect the science learning outcomes of Grade IV students at MI NW Surabaya. The statistical tests were conducted, and decisions were based on the significance value (p-value), with a threshold of 0.05. If the p-value was less than 0.05, the hypothesis was accepted, indicating a significant effect of the treatment.

RESULTS

Results of Test Validity

Based on the results of the instrument validity test as shown in Table 4.4, from questions 1 to 20, the validity analysis was carried out using the point-biserial correlation formula. Validity refers to the accuracy or precision of an instrument in measuring what it is intended to measure. The results of the instrument validity test, using the point-biserial correlation, are as follows:

Table 2. Results of Instrument Validity Test for Learning Outcomes

No	Item	r Calculated	r Table	Status
1	Item 1	0.4203	0.361	Valid
2	Item 2	0.4706	0.361	Valid
3	Item 3	0.2024	0.361	Invalid
4	Item 4	0.0831	0.361	Invalid
5	Item 5	0.3952	0.361	Valid
6	Item 6	0.4203	0.361	Valid
7	Item 7	0.3899	0.361	Valid
8	Item 8	0.2623	0.361	Invalid
9	Item 9	0.3956	0.361	Valid
10	Item 10	0.3899	0.361	Valid
11	Item 11	0.4598	0.361	Valid
12	Item 12	0.3952	0.361	Valid
13	Item 13	0.2552	0.361	Invalid
14	Item 14	-0.0681	0.361	Invalid
15	Item 15	0.1303	0.361	Invalid
16	Item 16	0.4026	0.361	Valid
17	Item 17	0.4203	0.361	Valid
18	Item 18	0.4021	0.361	Valid
19	Item 19	0.2443	0.361	Invalid
20	Item 20	0.1863	0.361	Invalid

Based on the table above, it can be concluded that all the instruments tested by the researcher through the test are valid, except for items 3, 4, 8, 13, 14, 15, 19, and 20. Therefore, from the total of 20 instruments, 12 instruments are valid.

Results of Reliability Test

After conducting the validity test, the next step was to perform the reliability test on only the valid instruments. The reliability test in this study used the Cronbach's Alpha formula. The results of the reliability test are as follows:

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Table 3. Reliability Test Results for Multiple Choice Test

Number of Items	Total Variance	r11 (Alpha)	Reliability
4.55977	2.94368	0.49872	Moderate

Based on the above calculation results, it can be seen that the test instrument obtained a Cronbach's Alpha value of 0.49872. Since the reliability value (r11) is less than 0.40, the instrument is considered to have moderate reliability.

Results of Normality Test

The normality test used the chi-square test. The normality for the experimental class resulted in a chi-square calculated value of 20.4489, which is greater than the chi-square table value of 11.0705. For the control class, the chi-square calculated value was 19, which is also greater than the chi-square table value of 11.0705.

Table 4. Normality Test Results

Class	Chi Calculated	Chi Table	Test Result
Experiment	20.4489	11.0705	Not normal
Control	19	11.0705	Not normal

Based on the above test results, it can be concluded that the results of the normality test are not normal because the calculated chi-square values are greater than the table values.

Homogeneity Test Results

In this study, the homogeneity test was conducted to determine whether the data from the sample were homogeneous or not.

The calculated F value is:

$$F_{\text{calculated}} = \frac{\text{Largest Variance}}{\text{Smallest Variance}}$$

$$F_{\text{calculated}} = \frac{79.63678}{71.22299}$$

$$F_{\text{calculated}} = 1.118133$$

$$F_{\text{table}} = 1.860811$$

Hypothesis Test Results

Table 5. Hypothesis Test Results

Data 1	Data 2
Average	75.13333
N	30
Variance	79.63678
t Test	8.266667
	0.066667
	5.028659
Root	2.242467
F Calculated	3.686416
F Table	1.67155
F Calculation Result	Ha Accepted

From the calculations using Microsoft Excel, the obtained $F_{\text{calculated}}$ value is 3.686416, and the F_{table} value is 1.67155. Comparing $F_{\text{calculated}}$ with F_{table}, it shows that $F_{\text{calculated}} > F_{\text{table}}$. Therefore, the alternative hypothesis (Ha) is accepted, and it can be concluded that there is an effect of ice-breaking learning based on poster media on the science learning outcomes of Grade IV students at MI NW Surabaya for the 2024/2025 academic year.

DISCUSSION

This study aims to examine the effect of using the ice breaking method based on poster media on student learning outcomes in the subject of Science for Grade IV at MI NW Surabaya during the 2024/2025 academic year. Before conducting the experiment, the researcher first observed the MI NW Surabaya school to obtain an overview of the school profile, teacher data, and student data. In addition, the researcher also observed the seriousness and discipline of the students in participating in the lessons using observation sheets.

Implementation Syntax of the Ice Breaking Method

In this study, the implemented ice breaking method consists of three main stages as follows:

1. Communicating the learning objectives and motivating the students.
2. Directing the students to sing a song related to the material to be studied.
3. Guiding the students to observe images relevant to the learning material.

After the observation was carried out, the researcher validated the questions used as instruments in this study. This validation was conducted with Grade IV students of MI NW Surabaya, and the results showed that out of 20 questions tested, 12 were considered valid and met the criteria to be used as research instruments.

Pilot Test and the Influence of Ice Breaking on Learning Outcomes

This study used a sample of 30 students, divided into two groups: the experimental group, which received the treatment of ice breaking based on poster media, and the control group, which used conventional learning methods. Pre- and post-tests were administered to assess student learning outcomes. The results of the normality test indicated that the data from both groups (experimental and control) were not normally distributed, while the homogeneity test showed that the variances of the two groups were homogeneous.

Hypothesis Testing and the Influence of Ice Breaking

Hypothesis testing was conducted using a t-test with pooled variance, with a significance level of 5% ($\alpha = 0.05$). The t-test results showed that the calculated F (3.686416) was greater than the F table (1.67155), indicating a significant effect of applying ice breaking based on poster media on the Science learning outcomes of Grade IV students at MI NW Surabaya. This aligns with Ernest R. Hilgard's statement (Asrianti, Nining, et al., 2016), which asserts that learning is a process that produces relatively permanent changes in students. Therefore, the ice breaking method based on poster media can encourage students to achieve better learning outcomes by transforming the classroom environment into a more conducive and enjoyable space.

Comparison with Previous Studies

The results of this study align with several previous studies that reveal the ice breaking method can enhance students' attention and concentration during lessons. Selvia, Mery (2022) also explained that ice breaking is a quick way to create a conducive atmosphere. Furthermore, this study specifically utilizes poster media as a supporting tool in ice breaking activities, which has proven to significantly improve student learning outcomes. Amalia (2017) also mentioned that ice breaking is designed to eliminate tension within a group, which has also been proven effective in creating a pleasant learning environment and supporting students' understanding.

Implications of the Findings

The findings of this study provide important implications for both theoretical and practical areas. Theoretically, this research enriches learning models that combine social interaction through ice breaking and the use of visual media, such as posters, to enhance students' understanding of the lesson material. Ni Komang Indah Yani, I Gede Margunayasa, and Ni Nyoman Kusmariyatni

(2020) state that as facilitators, teachers must be able to facilitate students' needs in the learning process. By doing so, the learning process becomes conducive, and the learning objectives can be achieved. Practically, this study can serve as a reference for teachers to develop more engaging and interactive teaching techniques that not only improve learning outcomes but also create a conducive classroom atmosphere.

Limitations of the Study

This study has several limitations, including: first, the sample used is limited to only one school, MI NW Surabaya, so the findings may not be generalizable to other schools with different characteristics. Second, learning outcomes were measured only through multiple-choice tests, which may not fully cover all aspects of student comprehension. Third, although the validity and reliability tests for the questions have been conducted, there were some invalid instruments that need to be corrected for future research.

From the results of this study, it can be concluded that the use of the ice breaking method based on poster media has a significant effect on the learning outcomes of Grade IV students in Science at MI NW Surabaya. This method has proven to be more effective compared to conventional learning in improving students' understanding of the material taught. This study suggests that teachers consider using ice breaking based on poster media in designing learning activities to increase student engagement and their learning outcomes.

CONCLUSION

Based on the results of the research, it can be concluded that poster-based ice-breaking activities have a significant positive effect on students' science learning outcomes in Grade IV at MI NW Surabaya. The experimental group, which received the poster-based ice-breaking intervention, showed higher post-test scores compared to the control group, demonstrating the effectiveness of the method. These findings imply that incorporating interactive and visually engaging strategies such as poster media can enhance student motivation, participation, and understanding in science learning. The study contributes to the development of innovative learning models that emphasize student-centered approaches and creative media use. It is recommended that future research explore the application of poster-based ice-breaking activities in other subjects and educational levels to validate and expand upon these findings. Overall, this research underscores the importance of adopting engaging instructional strategies to improve educational outcomes and foster active learning among students.

REFERENCES

Abdullah, P.M. (2015). *Living in the World that is Fit for Habitation: CCI's Ecumenical and Religious Relationships*. Yogyakarta: Aswaja Pressindo.

Algivari, Annisa, & Dea Mustika. (2022). Teknik Ice Breaking pada Pembelajaran Tematik di Sekolah Dasar. *Journal of Education Action Research*, 6(4), 433–439.

Al-tabani, Trianto. (2014). *Mendesain Model Pembelajaran Inovatif, Progresif, dan Kontekstual*. Surabaya: Prenadamedia Group.

Ardhani, A. D., Ilhamdi, M. L., & Istiningsih, S. (2021). Pengembangan Media Pembelajaran Berbasis Permainan Monopoli Pada Pembelajaran Ilmu Pengetahuan Alam (IPA) Kelas IV SD. *Jurnal Pijar IPA*, 4(1), 170–175.

Arsyad, Azhar. (2015). *Media Pembelajaran*. Jakarta: PT RajaGrafindo Persada.

Army, Megawati Reta. (2017). *Tingkat Kekritisan Lahan di Sub DAS Dengkemg DAS Bengawan Solo*. Skripsi, Universitas Gadjah Mada.

Asrianti, Nining, dkk. (2016). Pengaruh Biaya Promosi terhadap Tingkat Penjualan Motor pada PT.

Astra International Tbk. Cabang Kendari. *Jurnal Bisnis*. Universitas Halu Oleo Kendari. Diakses tanggal 11/04/2017.

Daryanto. (2016). *Media Pembelajaran*. Yogyakarta: Gava Media.

Elly Lanti. (2017). *Media Pengembangan Pendidikan Karakter Bagi Siswa Sekolah Dasar*. Gorontalo: Althra Samudra Publishing.

Felik Sad Windu Wisnu Broto. (2020). *Modul Latihan Kepemimpinan Tingkat Dasar Metode AR*. Yogyakarta: CV Budi Utama.

Hasrian Rudi Setiawan, & Nurzannah. (2018). *Media Pembelajaran Teori dan Praktek*. Yogyakarta: CV Bildung Nusantara.

Khoiriyah, K., & Rachman, A.U. (2019). Bercakap–cakap sebagai Metode Peningkatan Kemampuan Berbicara Anak. *Journal of Early Childhood Care and Education*, 2(1), 38.

Ni Komang Indah Yani, I Gede Margunayasa, & Ni Nyoman Kusmariyatni. (2020). Pengembangan Media Pop-Up Book Pada Topik Cara Makhluk Hidup Menyesuaikan Diri Dengan Lingkungan Kelas VI Sekolah Dasar. *Jurnal Pendidikan Guru Sekolah Dasar*, 9(3), 324.

Nurita, dkk. (2018). Kendala-kendala Guru dalam Mengimplementasikan Kurikulum 2013 di SD Negeri 7 Teupah Barat Kabupaten Simeulue. *Jurnal Ilmiah PGMI FKIP Unsiyah*, 3(4), 112.

Rudi Susilana. (2016). *Media Pembelajaran: Hakikat, Pengembangan, dan Penilaian*. Bandung: CV Wacana Prima.

Selvia, Mery. (2022). Pengaruh Ice Breaking terhadap Hasil Belajar Peserta Didik pada Pembelajaran Tema 8 Sub Tema 2 Kelas II Sekolah Dasar. *Jurnal IKA PGSD (Ikatan Alumni PGSD) UNARS*, 10(2), 122.

Slameto. (2013). *Belajar dan Faktor-faktor yang Mempengaruhinya*. Jakarta: Rineka Cipta.

Suwisnawati Gowasa, Harahap, F., & Suyanti, R.D. (2019). Perbedaan Penggunaan Media PowerPoint dan Video Pembelajaran terhadap Kemampuan Berpikir Tingkat Tinggi dan Retensi Memori Siswa pada Mata Pelajaran IPA di Kelas V SD. *Jurnal Tematik*, 9(1), 19–27.