



Increasing Learning Motivation of First Grade Elementary School Students Through Science Exhibition Activities in Theme-Based Learning

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ABSTRACTS

This study aims to evaluate the influence of science exhibitions on the learning enthusiasm of first-grade elementary school students. The exhibition was carried out through exploration and simple science experiments designed interactively and contextually. The methodology used was quantitative with a pre-experimental one-shot case study approach. The main measuring instrument, in the form of a questionnaire, was distributed to 73 students after the exhibition was completed. The findings showed that all indicators of student learning motivation were in the very good category, with the highest percentage reaching 94.52%. In addition, the validity test conducted using the Pearson Product Moment correlation method produced a value of 0.996, indicating a very strong correlation between science exhibition activities and increased student learning motivation. These results strengthen the idea that fun and contextual learning through science exhibitions can be an effective alternative to increase enthusiasm for learning, curiosity, and understanding of science concepts in children from an early age. Theoretically, this study contributes to the development of experiential and contextual learning approaches in science education. Practically, the findings provide guidance for educators and schools in designing interactive science learning activities that can enhance students' motivation and engagement in elementary education.

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1. INTRODUCTION

Learning motivation remains a crucial challenge in education. Various efforts have been made, but they have not been able to have an equal impact on all students. This problem is highly complex and requires a variety of approaches tailored to each student's context (Edu et al., 2021). Low learning motivation can be caused by two main sources. First, factors within the individual, such as brain problems, sensory impairments, physical disabilities, or psychological disorders. Second, factors in the surrounding environment or outside the individual, such as family circumstances, inadequate school facilities, and the community environment. Psychologically, learning motivation has a significant influence on the effectiveness of learning activities. In general, learning motivation is the enthusiasm and willingness to continue participating in learning activities that arise from internal or external drives. Students' learning processes can be maximized when supported by high motivation as the main driving factor. High learning motivation is generally reflected in students' sincerity, consistency, and energy in undergoing the learning process. Learning motivation also plays a role in forming a positive attitude towards the material being studied, so that learning outcomes can be achieved optimally (Amrulloh et al., 2024). Increasing student learning motivation can be done through a contextual learning approach that links teaching material to real-world problems and involves students in an active and enjoyable way (Muhartini et al., 2023). In this case, science learning has great potential to support the formation of such motivation. Through meaningful learning experiences that allow students to be directly involved, science learning can increase students' curiosity and enthusiasm for learning (Harefa & Telaumbanua, 2024; Hasibuan & Sapri, 2023).

Science is a branch of knowledge that studies various events that occur in nature, including living things and inanimate objects, as well as understanding life and the physical world. Science learning focuses on direct experience as a strategic approach to developing the ability to observe, investigate, and understand the environment scientifically. Therefore, the science learning process needs to be designed as a process of knowledge discovery so that students can more easily recognize and explore various aspects of the natural world around them (Suhayati & Watini, 2024; Sutrisna, 2021a). In the context of science learning that emphasizes the importance of direct experience, learning strategies are needed that can present real situations and foster students' curiosity. One form of implementation of this type of learning is through science exhibitions at school.

Science exhibitions in schools are an effective platform for fostering student creativity. Through these activities, teachers and students can use them as a source of knowledge, a learning medium, and a supporting instrument in the learning process. Meaningful learning projects are one approach that can hone students' skills, and exhibition activities such as these help broaden their horizons. In addition, students are encouraged to be actively involved in every stage of the project (Hidayat et al., 2023). Therefore, science exhibitions have the potential to encourage students' motivation to learn, especially in science learning, because they involve a concrete, meaningful, and enjoyable learning process. Therefore, this study focuses on efforts to increase learning motivation through science exhibition activities among first-grade elementary school students.

2. METHODS

In this study, quantitative methods were applied using a correlational research design, as well as a pre-experimental approach with a one-shot case study design, we can see in **Figure 1**. Pre-experimental research with a one-shot case study design is a type of design that

provides a single treatment to subjects, which is assumed to have an effect, followed by a post-test to measure the impact. Correlational research is research conducted to analyze the correlation between two or more interrelated variables. Data collection in this study was conducted to determine whether there was a correlation and the extent of the correlation between two or more variables (Amelia, 2023; Meilasari, 2022). There are two main variables in this study, namely the independent variable as X and the dependent variable as Y. The independent variable is the science exhibition, which functions as the influencing or causative variable. Meanwhile, the dependent variable is learning motivation, which is the variable that is influenced and becomes the impact or result of the independent variable (Handayani & Subakti, 2020).



Figure 1. One Shot Case Study

Description:

X = Independent variable / Science fair

Y = Dependent variable / Learning motivation

The assessment of the suitability level of learning media was conducted using percentage categories determined based on the Likert scale. The suitability criteria are shown in **Table 1**.

Table 1. Percentage of eligibility criteria

Achievement level	Eligibility Criteria
81% - 100%	Very Feasible
61% - 80%	Feasible
41% - 60%	Sufficiently Feasible
21% - 40%	Unsuitable
0% - 20%	Very Insufficiently Feasible

The analysis of the correlation between independent and dependent variables in this study was conducted using the Pearson Product Moment correlation formula, with the following formula:

Explanation:

r_{xy} = Test validity coefficient between variable x and variable y.

N = Number of students (respondents).

$\sum X$ = Total score for each item.

$\sum Y$ = Total score for all items.

$\sum X^2$ = Sum of squares of X values.

$\sum Y^2$ = Sum of squares of Y values

$\sum XY$ = Refers to the total product of the scores on each item and the total score of the respondents.

$(\sum x)^2$ = Square of the total sum of variable X values

$(\sum y)^2$ = Square of the total sum of variable Y values

3. RESULTS AND DISCUSSION

This study involved 73 Character School students as respondents. Data were collected through a questionnaire consisting of six statements, and the results of data processing are presented in **Table 2**.

Table 2. Percentage of students attending the exhibition

No	Media Indicator	Frequency (n)		Percentage (%)		Category
		Yes	No	Yes	No	
1	I felt happy after visiting the science fair.	69	4	94,52%	5,47%	Very Feasible
2	I understood the use of wind when I visited the science fair.	59	14	80,82%	19,18%	Very Feasible
3	The science fair was very exciting because there were many experiments.	69	4	94,52%	5,47%	Very Feasible

Based on **Table 2**, it can be seen that the percentages for each indicator are in the very good category. The first indicator obtained a percentage of 94.52%, which shows that science exhibition activities are very interesting for students. The second indicator recorded a percentage of 80.82%, which indicates that this activity contributes to improving students' understanding of the use of wind or air. Meanwhile, the third indicator obtained the same percentage as the first indicator, namely 94.52%, which illustrates that science exhibition activities provide an enjoyable experience for students, as they have the opportunity to try various experiments firsthand. The results of the calculation of student learning motivation percentages based on the analyzed questionnaire data are presented in **Table 3**.

Table 3. Percentage results of student learning motivation

No	Media Indicator	Frequency (n)		Percentage (%)		Category
		Yes	No	Yes	No	
1	I became more enthusiastic about learning science after visiting a science fair.	64	9	87.67%	12,33%	Very Feasible
2	I gained a better understanding of science after conducting experiments.	67	6	91,78%	8,21%	Very Feasible
3	My curiosity increased after visiting a science fair.	69	4	94,52%	5,47%	Very Feasible

Based on **Table 3**, it can be seen that all indicators are in the very feasible category. The first indicator shows a percentage of 87.67%, which indicates that science exhibition activities can increase students' enthusiasm or motivation to learn. The second indicator recorded a percentage of 91.78%, which shows that students understand science material better after conducting experiments directly at the science exhibition. Meanwhile, the third indicator obtained a result of 94.52%, which illustrates that after visiting the science exhibition, students' curiosity about science increased.

Overall, the results of the study obtained through the completion of questionnaires by students show that science exhibition activities received very positive responses from various aspects. All indicators measured were in the "very feasible" category, indicating that this science exhibition has strong potential in supporting the learning process. This activity can attract students' interest and also contribute to increasing their motivation to learn science

topics. Thus, science exhibitions can be an effective and enjoyable learning alternative for students.

$$\begin{array}{llll} \sum x = 197 & \sum x^2 = 13003 & \sum xy = 13130 & (\sum x)^2 = 38809 \\ \sum y = 200 & \sum y^2 = 13346 & N = 73 & (\sum y)^2 = 40.000 \end{array}$$

Furthermore, the correlation coefficient is calculated using the Pearson Product Moment formula:

$$\begin{aligned} r_{xy} &= \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2] - [N\sum Y^2 - (\sum Y)^2]}} \\ r_{xy} &= \frac{73(13130) - 197 \cdot 200}{\sqrt{[73 \cdot 13003 - (197)^2] [73 \cdot 13346 - (200)^2]}} \\ r_{xy} &= \frac{958490 - 39400}{\sqrt{[949219 - 38809] [974250 - 40000]}} \\ r_{xy} &= \frac{919090}{\sqrt{[910410] [934258]}} \\ r_{xy} &= \frac{919090}{\sqrt{850557825780}} \\ r_{xy} &= \frac{919090}{92225691961622} \\ r_{xy} &= 0,996 \end{aligned}$$

According to the results of the analysis, a correlation coefficient of 0.996 was obtained. This figure indicates a very high level, close to one, which means that the questionnaire is a highly reliable measurement tool. Therefore, it can be concluded that the statements in the questionnaire have excellent internal consistency and are able to accurately capture students' perceptions of science exhibitions. In addition, this high correlation value also indicates a very strong positive correlation between the implementation of science exhibitions and students' motivation to learn. The better the implementation of the exhibition, the higher the students' learning motivation related to science subjects. Thus, both the qualitative results (questionnaire responses) and quantitative results (reliability test) support the conclusion that science exhibitions are a learning approach that is not only feasible but also very effective in increasing students' interest and motivation to learn science. To determine the strength of the correlation between the variables studied, the interpretation of the correlation coefficient r presented in **Table 4** was used.

Table 4. Interpretation of the correlation coefficient value r

Coefficient interval	Level of correlation
0,80-1,000	Very Feasible
0,60-0,799	Feasible
0,40-0,599	Sufficiently strong
0,20-0,399	Low
0,00-0,199	Very low

Based on the results of the study, there is a significant correlation between the implementation of science exhibitions and an increase in student learning motivation. Science exhibitions designed with various interesting experiments and interactive learning media are able to attract students' attention optimally. The variety of topics presented, such as water,

fire, air, animals, plants, the universe, the earth, and the five senses, also encourage students' curiosity and interest in these science exhibitions. With this fun and exploratory approach, students show increased activity in the learning process and are encouraged to deepen their understanding of scientific concepts. Through an interactive and exploratory approach, science learning encourages students to not only be interested, but also to develop their thinking skills and increase their curiosity. Fun and effective science learning from elementary school will be an important foundation for students to understand it better at higher levels (Ansyah, 2023). This is in line with research conducted by Patappa (2020), which shows that the demonstration method can significantly improve children's science process skills. This improvement can be seen from the research results, namely that the average scientific process skills of children increased from 39.58% to 63.61% in cycle I, and reached 84.69% in cycle II.

Based on observations during the science fair, it was evident that students showed great enthusiasm in participating in all activities. They actively tried out the teaching aids, asked questions to teachers, and explained the results of their experiments to their friends and other visitors. Some students were even able to relate the experiments to their daily experiences, for example, when discussing wind as a source of kinetic energy. This situation reflects the emotional and cognitive involvement of students in the learning process, which is one of the characteristics of contextual learning. According to Muhartini et al., (2023), learning activities that are enjoyable and relevant to students' lives will be more effective in fostering enthusiasm for learning and conceptual understanding. In addition, a learning environment rich in social interaction, such as discussions and presentations, helps strengthen students' overall competencies.

Improving students' understanding of scientific concepts is one of the main objectives of science exhibitions. Based on the questionnaire results, 91.78% of students stated that they gained a better understanding of scientific concepts after conducting experiments firsthand during the exhibition. These findings show that hands-on experiences through exploration and practice are effective in helping students develop stronger and more lasting insights.

According to Piaget's theory, elementary school children are in a stage of cognitive development called concrete operational, which means they can better understand ideas when they are conveyed through direct experience and real activities rather than through abstract explanations (Wardani, 2022). Therefore, methods that emphasize direct experience, such as science exhibitions, can help students connect the concepts they learn with everyday reality. In this context, simple experiments presented in exhibitions provide concrete visual and practical illustrations that support a more complete internalization of concepts. Furthermore, exhibition activities also enable learning by doing, where students actively build their knowledge through direct interaction with objects or media. Sutrisna (2021b) states that science learning designed as a process of knowledge discovery will facilitate students' understanding of concepts because they learn from the process, not just from the product or end result. When students are directly involved in observation, experimentation, and discussion about what they see and feel, the process of conceptualization becomes more profound and memorable.

In addition, the learning process in science exhibitions is collaborative and interactive. Students not only understand the material from personal experiments, but also through interactions with friends, teachers, and other exhibition visitors. In this atmosphere, the concepts they understand are not only obtained through one-way instruction, but through a dialogical process that involves various perspectives and complementary explanations. This supports the formation of natural scaffolding that helps students develop concepts gradually.

Increased understanding is also influenced by the learning media used in the exhibition, such as models or simple experimental tools. These media help students visualize abstract phenomena more clearly and reinforce the process of conceptual visualization.

From all observations and data, it can be concluded that science exhibitions contribute significantly to students' understanding. This is reflected not only in the quantitative data, which shows very high results, but also in the learning dynamics created during the activities. With a fun, concrete, and meaningful approach, students become more prepared to receive and internalize science material effectively.

Research on exhibition activities or science-based project learning has also been conducted by Wahyuni et al. (2023) who applied science learning using the Project-Based Learning (PjBL) model. The study showed that active student involvement in designing and presenting science projects can increase learning motivation, from 69.57% in the pre-cycle to 74.87% after the first cycle. In addition, students' conceptual understanding increased from 54.96% in the pre-cycle to 72.71%. It can be understood that participating in learning using the PjBL approach, where they play a direct role as project implementers, can demonstrate an increase in learning motivation and conceptual understanding.

Unlike the aforementioned study, this study takes a different perspective, namely by placing students as visitors in science exhibition activities. Although students were not directly involved in the project creation, the results showed that 91.78% of students experienced an increase in their understanding of science, and 87.67% showed an increase in learning motivation after visiting the exhibition. This comparison shows that both direct and indirect involvement in project-based activities can have a positive impact on the learning process. Thus, this study contributes to expanding the application of the real-world project learning approach by placing students as active observers in an educational learning environment.

4. CONCLUSION

This study proves that science exhibitions have a significant impact on increasing the learning motivation of first-grade elementary school students. This is reflected in the high indicators of student engagement, enthusiasm during activities, increased understanding of the concepts learned, and the growth of curiosity. Thus, science exhibitions can be identified as a meaningful, enjoyable, and effective learning approach in supporting the thematic learning process at the elementary school level.

The results of this study illustrate that teachers can utilize science exhibition activities as an alternative learning strategy that can stimulate students' curiosity and interest in learning. This study has limitations in that the subjects are still in first grade and only as visitors to the science exhibition, so the indicators assessed are still limited to basic aspects such as enjoyment, simple understanding, and initial motivation. Therefore, it is recommended that future research be conducted at higher grade levels (grades 4-6) so that the indicators used can be expanded to include aspects of critical thinking, concept analysis, or problem solving.

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