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Joyful Learning: Implementation and Its Impact on HOTS for Elementary School Students

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Abstract

21st-century learning demands that students possess higher-order thinking skills (HOTS), yet practices in elementary schools still largely utilize conventional methods that do not support the development of these abilities. This study aims to describe the implementation of the joyful learning approach at State Elementary School 3 Banjarejo and analyze its impact on students' HOTS. The study used a mixed-methods approach with an embedded concurrent design, involving 15 fifth-grade students. Data were collected through observation, interviews, and HOTS tests before and after the treatment. The results showed that the joyful learning approach was implemented contextually through various participatory activities such as educational games, discussions, creative projects, and role-playing. This implementation created a fun, child-friendly learning atmosphere and encouraged active student engagement. Quantitative data analysis showed a significant increase in HOTS scores, with an average gain score of 0.44 and the highest increase in the creativity indicator. In conclusion, the joyful learning approach is effective in improving elementary school students' higher-order thinking skills, even in the context of rural schools with limited facilities.

Keywords: contextual and interactive learning, deep learning, joyful learning, learning innovation, higher order thinking skills

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1. Introduction

Deep Learning is one of the subfields of Machine Learning and an integral part of Artificial Intelligence (AI) (Putri et al., 2023). The main characteristic of this approach lies in the use of Artificial Neural Networks that consist of multiple hidden layers (deep neural networks). These layered structures enable the system to process and extract complex patterns from large amounts of raw data, such as images, text, and sound (Kovač et al., 2025).

In the current global context, the role of Deep Learning has become increasingly strategic, including in the field of education. This technology has been widely utilized for educational data analysis, the development of adaptive learning systems, and the personalization of learning materials to enhance the efficiency and effectiveness of the learning process (Susanto et al., 2025).

Deep Learning is not only used in the technological domain but also carries a pedagogical meaning often referred to as “Deep-

er Learning”. In the pedagogical context, deep learning emphasizes the development of critical thinking, complex problem-solving, effective communication, and the application of knowledge in real-world contexts. Thus, deep learning in education is not merely oriented toward the mastery of factual knowledge but also toward the formation of higher-order cognitive competencies that are relevant to the demands of the 21st century (Rahmandani et al., 2025).

The demands of education in the 21st century have undergone significant changes, not only in terms of technology and information, but also in the competencies students must possess. One of the key competencies emphasized is Higher Order Thinking Skills (HOTS), as proposed by (Susantini, 2021). These skills encompass critical, analytical, and creative thinking, as well as the ability to solve problems independently and reflectively (Ernawati, 2016). By possessing HOTS, students are not only able to passively comprehend information but also to process, evaluate, and create based on that information.

According to (Insani et al., 2025), mastery of HOTS is not only a benchmark for academic success but also a crucial foundation in preparing students to face the real challenges of everyday life. The rapidly changing world demands individuals who are able to think reflectively, make logical decisions, and find innovative solutions to complex problems that arise (Tika, 2021). Therefore, learning that can facilitate the development of HOTS is crucial and urgent to implement at various levels of education, including elementary education.

However, the reality on the ground shows a significant gap between the ideals of the 21st-century curriculum and the learning practices that occur in schools, particularly at the elementary school level. Many elemen-

tary schools in Indonesia, particularly in areas that have not yet been optimally touched by educational innovation, still maintain conventional learning models (Khamdanah et al., 2023). This model is generally characterized by one-way lectures, memorization of material, and mechanical assignments, with the teacher still playing a dominant role as the primary source of information (Natasya et al., 2025). This approach does not provide sufficient space for students to develop active, creative, or independent thinking.

This situation directly impacts elementary school students' low higher-order thinking skills, as the learning process is not designed to engage students cognitively and emotionally (Angraini & Sriyati, 2019). This finding is reinforced by research (Khalil & Wardana, 2022), which states that weak HOTS skills among elementary school students remain a fundamental challenge in the Indonesian primary education system. Therefore, a learning approach is needed that can bridge the gap between curriculum demands and the reality of classroom learning.

One approach considered a potential solution to these problems is student-centered learning, which encourages their active involvement in the learning process (Izzatunniisa et al., 2024). One approach gaining increasing attention in education is joyful learning. According to (Rahman, 2021), joyful learning is an approach that can stimulate students' enthusiasm and motivation through enjoyable, interactive, and meaningful learning experiences. This approach aims not only to make students enjoy learning but also to ensure that the learning experience is profound and meaningful (Masayu Andayanie et al., 2025).

According to (Lutfi et al., 2025), joyful learning prioritizes the creation of a positive, child-friendly learning atmosphere, filled with activities that encourage student physi-

cal, emotional, and cognitive engagement. In practice, this approach can be realized through various strategies such as educational games, project-based learning, group discussions, experiments, and other creative activities. By creating a positive and supportive learning climate, students will feel comfortable, free from pressure, and more motivated to learn actively (Guci & Kirana, 2025). This, in turn, contributes to increased student participation, engagement, and learning achievement (Mubaroq, 2025).

The joyful learning approach also aligns with the theory proposed by (Wali et al., 2020), which states that a pleasant learning environment has a positive correlation with students' emotional and cognitive engagement. These two dimensions are essential foundations for developing HOTS skills. When students are emotionally engaged, they feel valued, motivated, and more open to learning. Meanwhile, cognitive engagement ensures that they truly think deeply and meaningfully. Support for this approach also comes from (Mandailina & Syaharuddin, 2024), who assert that a conducive and open learning environment can encourage students to think critically and creatively, especially in challenging problem-solving situations.

Furthermore, the revised Bloom's taxonomy theory by Anderson & Krathwohl (2001) in (Setiawati, 2019) outlines that HOTS encompasses three higher levels of thinking: analyzing, evaluating, and creating. These three abilities can only develop optimally if students engage in contextual, interactive, and enjoyable learning activities (Deviana & Sulistyani, 2021). In other words, joyful learning is the right medium to encourage students to reach these levels of thinking.

This research is novel in examining the systematic and measurable application of joyful learning in elementary schools, specif-

ically at State Elementary School 3 Banjarejo. To date, most studies have only discussed the concept and potential of joyful learning theoretically, without empirically demonstrating it in the field. This research not only focuses on how this approach is implemented in real-life learning contexts but also specifically analyzes its impact on the development of HOTS in elementary school students.

The research gap this study aims to address is the lack of research on the direct implementation of joyful learning in elementary schools in rural areas. Schools in these areas often face limitations in facilities, human resources, and access to information, making the implementation of learning innovations more challenging than schools in urban areas, which generally have more comprehensive educational infrastructure. Therefore, it is important to understand how joyful learning can be implemented contextually within these limitations and how this strategy significantly impacts the development of students' higher-order thinking skills.

Based on the background, novelty, and research gaps described above, the main objectives of this study are: (1) To describe how the joyful learning approach is implemented in learning activities at State Elementary School 3 Banjarejo; and (2) To analyze the extent of the impact of this implementation on the development of high-level thinking skills (HOTS) in elementary school students.

2. Method

This study employed a mixed-methods approach with an embedded concurrent design, employing both qualitative and quantitative approaches. The study was conducted at State Elementary School 3

Banjarejo, a rural school, with 15 fifth-grade students as subjects.

Data collection techniques include: (1) Non-participatory observation of the learning process to see the implementation of joyful learning; (2) Semi-structured interviews with class teachers to find out the perceptions and strategies used; (3) HOTS tests before and after treatment in the form of questions based on the revised Bloom taxonomy with analysis, evaluation, and creation indicators.

Qualitative data were analyzed using the Miles & Huberman model, which includes data reduction, data presentation, and conclusion drawing. Quantitative data were analyzed using descriptive statistics (means, percentages) and a gain score test using Microsoft Excel. The research flow is presented in Figure 1.

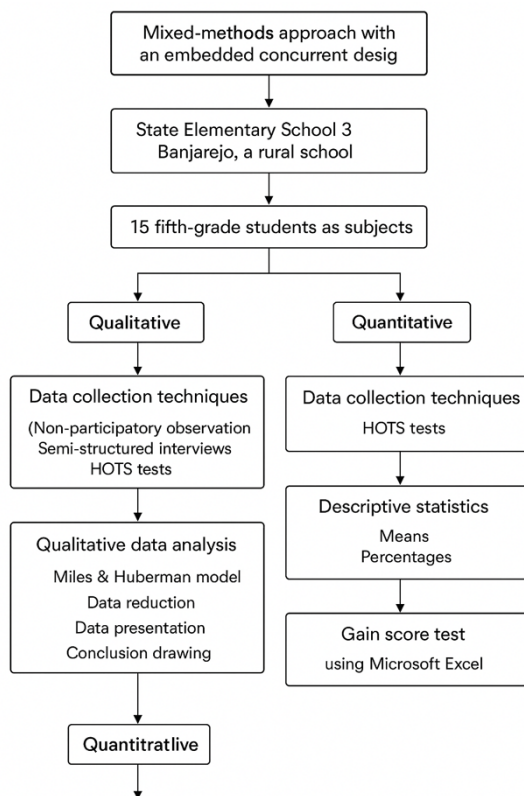


Figure 1. Research Flow

3. Result and Discussion

a. Implementation of Joyful Learning at State Elementary School 3 Banjarejo

The results of non-participatory observations and semi-structured interviews conducted in this study indicate that the joyful learning approach has been implemented in a planned, contextual, and sustainable manner in the fifth grade of State Elementary School 3 Banjarejo (Figure 2). The class teacher actively designs learning activities that emphasize student activity, creativity, and participation. Learning activities are not only one-way, but are packaged through various interactive strategies such as role-playing, group quizzes, educational games, guided discussions, and craft activities based on recycled materials.

The classroom atmosphere also appears to support enjoyable learning. Teachers decorate the classroom with engaging visual elements, provide reading corners and student expression boards, and allow students the freedom to express their understanding through various media. This approach indirectly creates a child-friendly atmosphere, reduces learning stress, and provides a sense of psychological security for students.

Interviews with classroom teachers revealed that this approach is not only intended to create a fun learning environment but also as a strategic effort to increase students' cognitive engagement. Teachers reported that this approach helps students who are usually passive become more enthusiastic in answering questions, providing opinions, and completing assignments collaboratively. Teachers also develop lesson plans aligned with HOTS (Higher Order Thinking Skills) indicators, where students are involved in activities such as analyzing story content, comparing two ideas, evaluating solution options to a problem, and creating new works from learning experiences.

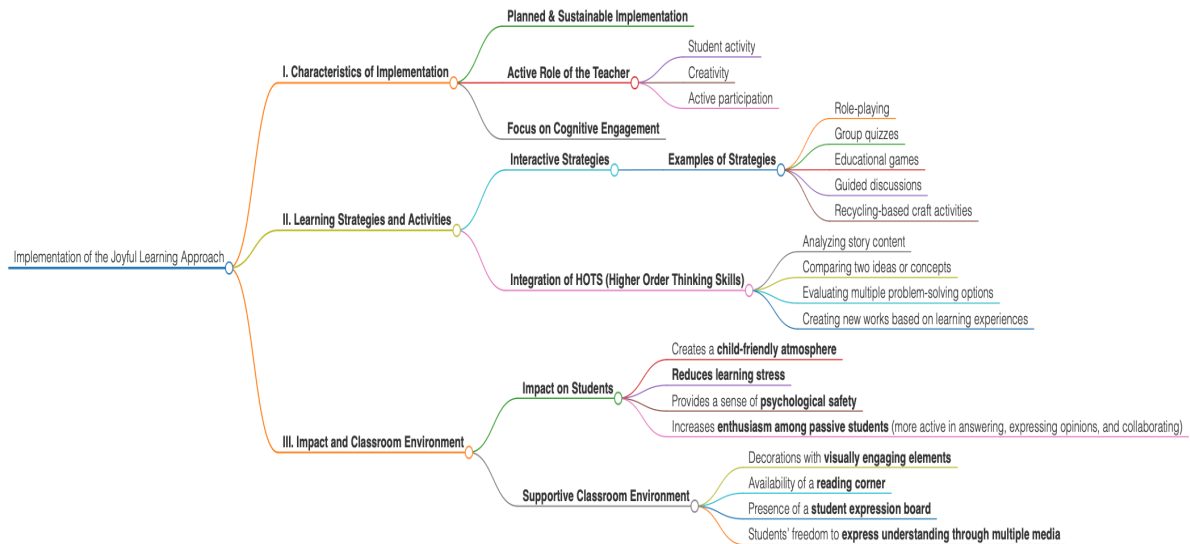


Figure 2. Implementation of Joyful Learning at Sta-te Elementary School 3 Banjarejo

b. Impact on Students' HOTS

Measurement of the impact of the implementation of joyful learning on students' higher-order thinking skills was conducted through pretests and posttests using instruments compiled based on the revised Bloom's taxonomy indicators. The three indica-

tors measured were: (1) analytical skills, (2) evaluation skills, and (3) creative skills. The data obtained showed a significant increase in scores for each indicator.

The following is a summary table of the results of the comparison of pretest and posttest scores in Table 1.

Table 1. Comparison Results of Pretest and Posttest Scores

HOTS indicator	Average Pretest Score	Average Posttest Score	Gain Score	Percentage Increase
Analysis	55,3	73,2	0,40	32,4%
Evaluation	48,7	70,1	0,42	36,4%
Creation	50,0	74,6	0,49	49,2%

In aggregate, the students' average HOTS score increased from 51.3 in the pretest to 72.6 in the posttest. This represents an increase of 21.3 points, or approximately 41.5% of the maximum achievable score. The average gain score was 0.44, which,

according to the Hake classification, falls into the moderate to high category.

The following is a visualization of the pretest, posttest, and gain scores in the form of a bar chart in Figure 3.

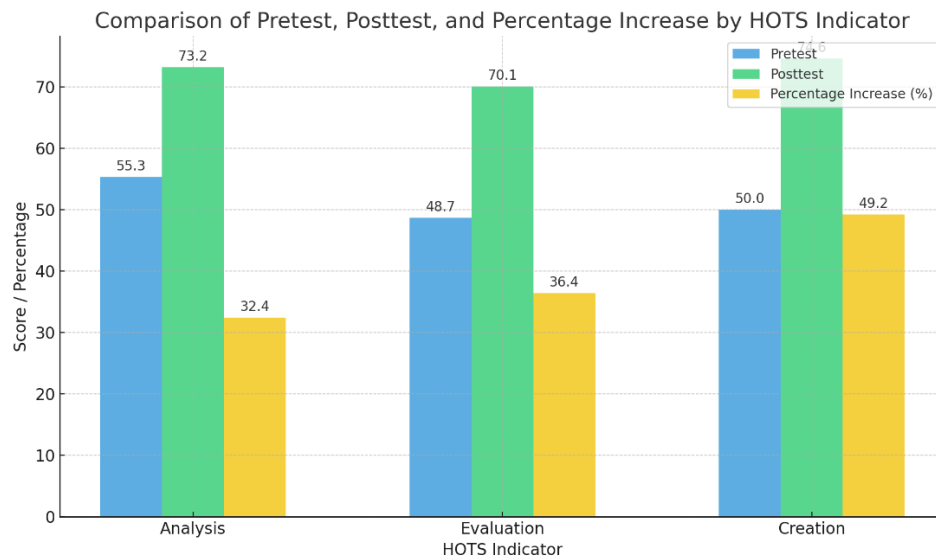


Figure 2. Bar Chart of Pretest, Posttest, and Percentage Increase

The bar graph above shows a comparison of the average pretest, posttest, and percentage increase for each HOTS indicator: analysis, evaluation, and creation. It can be seen that posttest scores consistently increased across all indicators compared to pretest scores. The greatest increase was reflected in the creation indicator, which also produced the highest gain score.

The largest score increase occurred in the creativity indicator, indicating that students became more capable of developing new ideas, creating alternative solutions, and constructing original products based on the learning they had participated in. This indicator is highly relevant to the goal of joyful learning, which encourages students to express their understanding in creative and personal ways.

The results of this study indicate that the consistent and planned implementation of joyful learning can be an effective alternative learning strategy to improve higher-order thinking skills (HOTS) in elementary school students. This is especially important for schools in rural areas, which are often considered to have limited access to educational innovations and learning support facilities.

These findings demonstrate that geographical and resource limitations are not necessarily the main obstacles to creating meaningful learning, as long as there is a commitment from educators to innovate in the learning process.

The joyful learning approach, which prioritizes a fun, meaningful, and engaging learning environment, has been shown to stimulate two crucial components in the development of higher-order thinking skills: cognitive engagement and emotional engagement. These two aspects are closely interrelated and inseparable in developing deep understanding and reflective thinking skills in students, as emphasized by (Wali et al., 2020). By creating a relaxed learning environment and emphasizing active student involvement, learning becomes more engaging and meaningful (Budi Utomo et al., 2025; Masayu Andayanie et al., 2025).

The findings of this study are also in line with the results of previous research conducted by (Nahdi, 2015), which concluded that the use of a fun, experiential learning model can significantly improve elementary school students' divergent thinking skills. Divergent thinking skills themselves are an important

component of the HOTS framework, as they direct students to develop many alternative solutions to problems. Furthermore, (Aritonang et al., 2025) emphasized that creating an emotionally supportive and conducive classroom atmosphere has a significant impact on students' cognitive engagement. A positive and inclusive classroom environment encourages students to not only understand the material but also to be more open to asking questions, discussing, and exploring new ideas in the context of problem-solving.

Furthermore, the joyful learning approach is not merely about creating enjoyable learning situations in the narrow sense, such as games or entertainment, but also aims to build learning experiences that are relevant to students' lives, intellectually challenging, and collaborative. This is emphasized by (Lutfi et al., 2025), who stated that joyful learning is a comprehensive approach, encompassing cognitive, affective, and social dimensions. The application of methods such as group discussions, educational games, simulations, and mini-projects has been proven to have a positive impact. Through these activities, students not only gain a conceptual understanding of the learning material but are also trained to relate the information they learn to real-life experiences, conduct in-depth analysis, evaluate ideas, and create innovative solutions.

This finding is also supported by a study (Fauzi et al., 2022), which states that improving HOTS skills is not only influenced by the learning strategies used by teachers but also depends heavily on changes in the classroom climate. A classroom climate that supports exploration, experimentation, and freedom of thought is essential for students to feel comfortable expressing opinions, asking questions, and trying new things without fear of making mistakes. In this context, a joyful learning approach provides a safe space for

students to try, fail, learn from mistakes, and continue to grow. Recognizing student contributions, both in the form of ideas and work, is crucial for fostering self-confidence and strong learning motivation.

Recent research has also highlighted that a positive classroom climate, one that actively supports exploration, experimentation, and freedom of thought significantly enhances students' higher-order thinking skills (HOTS). A quantitative study conducted in smart classroom settings found that peer interaction and learning motivation had a direct and positive impact on students' HOTS development (Lu et al., 2021). Moreover, a systematic review on the relationship between classroom climate and student achievement revealed that a supportive classroom environment, characterized by positive teacher–student interactions, clear expectations, and emotional safety, was closely associated with higher academic performance and cognitive engagement (Majumder & Beri, 2025).

Therefore, implementing approaches such as joyful learning, which intentionally create a safe and encouraging space for students to try, fail, reflect, and grow, serves as an effective strategy to foster the development of HOTS through the establishment of a supportive classroom climate (Fatika Alim et al., 2025; Prihantoro et al., 2025; Siregar & Fauzan, 2025).

One significant finding of this study is the increase in the creativity indicator in students' thinking processes. This is consistent with the revised Bloom's Taxonomy theory by Anderson & Krathwohl (2001) as explained by (Setiawati, 2019). In this taxonomy, creating is the highest level in the cognitive domain, reflecting students' ability to formulate ideas, design solutions, and produce new work based on their previous understanding and analysis. Therefore, learning strategies

that facilitate students' creative thinking and creation are highly appropriate in the context of 21st-century learning. The joyful learning approach has great potential in shaping students who are not only able to understand concepts but also able to transform that knowledge into tangible, valuable forms.

In addition to contributing to improving students' thinking skills, this research also makes a significant contribution to the development of educational theory and practice, particularly in the local context. The fact that the joyful learning approach was successfully implemented in a rural elementary school, despite its limitations, demonstrates that innovation in education does not always require sophisticated technology or modern infrastructure. What is more important are teachers' creativity in designing learning, their ability to understand student characteristics, and thorough planning and consistent implementation. These findings underscore the importance of teachers' commitment to creating a supportive and enjoyable learning environment, which is a crucial prerequisite for successful learning.

Overall, this study provides strong empirical evidence that learning delivered in a fun, contextual, and collaborative environment can significantly improve elementary school students' higher-order thinking skills. This addresses the challenges of 21st-century education, which requires students to become not only memorizers of information but also critical, innovative, and independent thinkers in solving real-life problems.

Thus, the success of implementing joyful learning in improving HOTS is fundamentally influenced not only by the variety of teaching methods used by teachers, but also by a number of other factors, such as the quality of interactions between teachers and students, the use of relevant and engaging learning media, and the creation of an

inclusive and supportive learning environment. All of these factors work synergistically to create a learning process that is not only meaningful but also has a long-term impact on students' thinking skills.

4. Conclusion

Based on the results and discussion, it can be concluded that the implementation of the approach joyful learning at State Elementary School 3 Banjarejo, learning is structured and contextualized through various fun, participatory, and creative learning activities. Teachers actively design learning that engages students in discussions, educational games, creative projects, and collaborative activities relevant to everyday life. A positive classroom atmosphere, engaging visual media, and warm relationships between teachers and students contribute to a conducive and child-friendly learning environment.

The impact of the implementation joyful learning This has been proven to significantly improve students' higher-order thinking skills (HOTS). There was an increase in scores on three HOTS indicators, including analysis, evaluation, and creation, with an average gain score of 0.44, which is categorized as moderate to high. The highest increase occurred in the creation indicator, indicating that students are increasingly able to generate original ideas and solutions. Thus, the learning approach joyful learning effective in encouraging the development of HOTS in elementary school students, even in the context of rural schools with limited facilities.

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