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# Improving Elementary School Students' Learning Outcomes in Science Learning by Using the Talking Stick Type Cooperative Model Assisted by Mystery Box Media

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**Abstract:** This research is motivated by the low learning outcomes of students in the Natural and Social Sciences learning in class IV MIN 21 Aceh Besar due to the lack of active student involvement in the learning process. The low interaction, participation, and response of students have an impact on less than optimal understanding of concepts. This study aims to: (1) describe teacher activities in implementing the Talking Stick type cooperative learning model assisted by Mystery Box media; (2) describe student activities during learning; and (3) determine the improvement in student learning outcomes after the implementation of the model. The method used is Classroom Action Research which is carried out in two cycles, each including the planning, implementation, observation, and reflection stages. Data were collected through observations of teacher and student activities as well as learning outcome tests. Data analysis was carried out using a percentage formula. The results of the study showed a significant increase, namely teacher activity increased from 71.15% to 92.30%, student activity from 69.23% to 88.46%, and student learning outcome completion from 57.14% in cycle I to 90.47% in cycle II. Thus, the Talking Stick type cooperative learning model assisted by Mystery Box media has proven effective in increasing student activity and learning outcomes in the science subject.

**Keywords:** Talking Stick, Mystery Box, learning outcomes, student activity, Science Learning.

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## INTRODUCTION

The implementation of learning is a key factor in achieving instructional objectives. In the learning process, various factors influence the attainment of these objectives, one of which is the role of the teacher as the manager and director of classroom instruction. Teachers have a major responsibility to create a learning environment that is effective, active, and meaningful for students. Learning itself is a process of expanding understanding and knowledge. In the school context, learning is carried out through the application of various strategies, models, and instructional media that support the achievement of learning objectives (Ministry of Education and Culture Regulation, 2020). Therefore, education can be optimized through learning activities that involve the appropriate and varied selection of strategies, models, and instructional media.

During the learning process, students are encouraged to participate actively so that learning objectives can be achieved optimally. This requires teachers to motivate and inspire students comprehensively. Teachers are expected to have a strong understanding of the subject matter as well as the instructional strategies employed (Hadiyanti, 2021). Consequently, the role of teachers is crucial in creating active and meaningful learning experiences that have a positive impact on student learning outcomes.

In addition, in the teaching process, teachers need to consider students' learning styles and select appropriate learning models. A learning model is a plan or pattern used as a guideline for designing classroom instruction, which includes instructional approaches, learning objectives, learning activities, learning environments, and classroom management (Trianto, 2014). Thus, teachers have the flexibility to select and implement various learning models according to students' needs in order to achieve the expected learning objectives and outcomes.

The level of students' learning success can be observed from the learning outcomes obtained at the end of instruction. Learning outcomes refer to the achievements attained by students after undergoing the learning and evaluation processes (Syahputra, 2020). Each student demonstrates different learning outcomes; therefore, teachers need to use appropriate learning models and instructional media to optimize student achievement.

The selection of learning models must be adjusted to instructional needs, model effectiveness, compatibility with the subject matter, and the teacher's ability to implement them. Therefore, teachers must possess appropriate instructional strategies so that the learning process can be carried out effectively and efficiently (Sardiman, 2013).

However, based on observations conducted at MIN 21 Aceh Besar during IPAS instruction on January 20, 2025, it was found that students' learning outcomes had not yet reached the Minimum Learning Achievement Criteria and had not shown significant improvement. One of the main causes of this problem is the low level of active student participation in the learning process. When the teacher explains the material, most students merely listen without demonstrating adequate understanding. When given the opportunity to ask questions, students tend to remain silent and show limited ability to express opinions or inquiries. Even when the teacher poses questions to assess comprehension, many students are unable to respond. This condition indicates a low level of self-confidence and limited understanding of the subject matter.

In addition, students' interest and engagement in learning activities are relatively low. Several students appear unfocused, engaging in behaviors such as joking, daydreaming, or participating in activities unrelated to the lesson. During group discussions, only a small number of students actively participate, while the others tend to remain passive and uninvolved.

Interviews with the fourth-grade IPAS teacher revealed that the teacher had attempted to apply lecturing and question-and-answer methods to increase student participation. However, these methods had not been effective in significantly improving student engagement or learning outcomes. Based on the final semester examination data for the fourth-grade IPAS subject at MIN 21 Aceh Besar, only 9 out of 21 students achieved mastery learning with a minimum achievement criterion of 75. Thus, the level of student mastery reached only 42.85%, while the remaining 57.15% of students did not achieve mastery.

To create innovative and engaging learning experiences, teachers need to apply varied learning models and instructional media. Variation in instruction not only aims to increase students' learning motivation but also to reduce boredom in the learning process so that learning outcomes can improve. Based on these conditions, this study applies the cooperative learning model of the Talking Stick type assisted by Mystery Box media as an effort to improve student learning outcomes.

Cooperative learning is an instructional approach that groups students into heterogeneous groups in terms of ability and socio-cultural background (Fajeri et al., 2023). Through this model, students are expected to work collaboratively, support one another,

and develop social skills during the learning process. One form of cooperative learning is the Talking Stick type, which uses a stick as an educational game tool to train students to express opinions and answer questions. The Talking Stick model is designed attractively to increase students' motivation and enthusiasm for learning (Junet et al., 2022). Its main advantage lies in encouraging students to always be prepared for learning activities, as those who hold the stick must answer the teacher's questions, thereby transforming previously passive students into more active participants.

The cooperative learning model of the Talking Stick type is a group-based learning model that uses a stick as an instructional aid in the learning process. Each group generally consists of four to six students. After students study the material presented by the teacher, the student holding the stick is given a question and is required to answer it (Molan et al., 2020). Cooperative learning itself consists of a series of instructional strategies designed to encourage students to work together actively during the learning process. The main objective of cooperative learning is to increase student motivation and active involvement in learning so that students can help one another and take responsibility for understanding the material and completing learning tasks (Wardah et al., 2021).

The Talking Stick model is designed to measure the extent of students' mastery of the subject matter through the use of a stick to determine speaking turns. Students who receive the stick are asked questions by the teacher and must answer them, after which the stick is passed to another student in turn until all students have had the opportunity to participate. This technique also serves to train students' courage and increase their self-confidence in expressing opinions (Andrian & Maulia, 2023). Suprijono (2010) explains that Talking Stick is a learning model that uses a stick as a medium to assess students' mastery of the learning material. Based on this view, it can be concluded that the Talking Stick learning model is a cooperative learning model that requires students to be well prepared in understanding the material, because every student who holds the stick must be able to answer the questions given by the teacher.

In its implementation, the Talking Stick model consists of several learning stages, beginning with a preparation stage in which the teacher prepares the stick and learning materials. The implementation stage involves students reading the material, closing their books, and then receiving the stick in turns to answer the teacher's questions. The final stage consists of follow-up activities, including learning reflection, drawing conclusions, and closing the lesson (Istarani, 2011; Suprijono, 2010). Sadiman (2008) adds that in applying the Talking Stick model, teachers may form heterogeneous groups, provide opportunities for discussion, distribute student worksheets, and conduct learning evaluations. Based on these perspectives, this study adopts the Talking Stick steps proposed by Sadiman because they are more detailed and easier for elementary school students to understand.

Every learning model has strengths and weaknesses. The Talking Stick model has several advantages, including attracting students' attention, increasing learning motivation, encouraging courage and participation, creating an enjoyable learning atmosphere, and enhancing interaction between teachers and students. However, this model also has some limitations, such as requiring relatively more time, not fully involving all students, potentially diverting students' focus to the game aspect, being less suitable for complex material, and demanding high creativity from teachers in classroom management (Sadiman, 2008). Based on this explanation, the Talking Stick learning model has considerable potential to improve student activeness and learning outcomes when applied appropriately and in accordance with students' characteristics.

Instructional media are essential components of the learning process that function as intermediaries for delivering messages or information from teachers to students. In innovative and enjoyable learning environments, Mystery Box media represent an alternative instructional medium capable of increasing students' active involvement (Sasi, 2022). Mystery Box is an instructional medium in the form of a closed box containing various objects, pictures, or question cards related to a particular subject matter. This medium is designed to stimulate students' curiosity through elements of surprise or

mystery that must be uncovered by students, thereby encouraging activeness, critical thinking skills, and confidence in expressing opinions (Dianti et al., 2022).

Supriyadi (2018) states that Mystery Box is a game-based instructional medium that contains elements of surprise and is designed to increase students' enthusiasm and interaction in learning activities. Meanwhile, Siregar (2020) emphasizes that this medium helps students understand material through an exploratory approach, in which students actively seek information based on clues or objects contained in the box. Mystery Box media are highly suitable for elementary school learning because they align with students' characteristics of enjoying play and exploration. Activities such as opening the mystery box, guessing its contents, and discussing the findings in groups or as a class make learning more enjoyable and meaningful.

The use of Mystery Box media provides various benefits, including facilitating understanding of the material, encouraging student-centered learning, increasing interaction between teachers and students, enhancing student activeness, and helping improve memory and thinking skills (Ariska & Suyadi, 2020). In addition to its advantages, Mystery Box media also have several limitations, such as requiring skill and patience in their preparation, not being usable by many students simultaneously, requiring relatively large storage space, and involving relatively high costs and time (Ari Sandy & Yermiandhoko, 2018). Mystery Box media can be understood as innovative and interactive instructional media which, when combined with the Talking Stick learning model, are capable of increasing student engagement and learning outcomes, particularly in IPAS subjects at the elementary school level.

## METHODS

This study used a Classroom Action Research (CAR) approach, a reflective research method conducted by teachers in their own classrooms with the goal of improving and enhancing the quality of learning processes and outcomes. CAR emphasizes collaboration, continuous reflection, concrete actions, and iterative cycles as a systematic effort to improve learning (Mulia & Suwarno, 2016). In CAR, teachers act as researchers, designing, implementing, observing, and reflecting on learning actions to increase the effectiveness of the teaching and learning process (Tampubolon, 2014).

The subjects of this study were all 22 fourth-grade students at MIN 21 Aceh Besar in the 2024/2025 academic year, consisting of 10 boys and 12 girls with diverse characteristics and abilities. The study was conducted in fourth-grade students at MIN 21 Aceh Besar, Ingin Jaya District, Aceh Besar Regency, for one academic year, from the even to the odd semester of the 2024/2025 academic year.

The research instruments used consisted of teacher activity observation sheets, student activity observation sheets, and learning outcome tests. The teacher activity observation sheet was used to assess the implementation of learning and the teacher's ability to apply the learning model. The student activity observation sheet was used to determine the level of student activity and participation during the learning process. The learning outcome test was used to obtain quantitative data related to the achievement of student learning outcomes after the implementation of the action. The data obtained were analyzed descriptively quantitatively using percentage techniques. Data analysis included analysis of teacher activities, student activities, and student learning outcomes in each cycle. The results of the analysis were used to determine the improvements that occurred from cycle to cycle and to determine the success of the implementation of the Talking Stick cooperative learning model assisted by the Mystery Box media in improving the learning outcomes of fourth-grade science students at MIN 21 Aceh Besar.

## RESULTS

This classroom action research was conducted in two cycles, namely Cycle I and Cycle II. Each cycle consisted of the stages of planning, implementation, observation, and reflection. The action implemented was the application of the cooperative learning model of the Talking Stick type assisted by Mystery Box media in the IPAS subject for fourth-grade students at MIN 21 Aceh Besar.

The implementation of Cycle I indicated that the application of the cooperative Talking Stick learning model assisted by Mystery Box media had not yet been fully optimal. The observation results of teacher activities showed a percentage of 71.15%, which fell into the good category but had not yet reached the expected level of mastery. Several aspects still required improvement, including the teacher's ability to conduct apperception, provide motivation, manage the classroom during group formation, and encourage students to express responses and draw conclusions from the lesson.

Student activities in Cycle I also showed suboptimal results. Based on the observation findings, student activity reached 70.19%, categorized as good but not yet meeting the mastery criteria. Students still appeared to lack confidence in expressing their opinions, were less active in group discussions, and had not fully been able to relate the learning material to their daily experiences.

Student learning outcomes in Cycle I showed that out of 21 students, 12 students (57.14%) achieved mastery learning, while 9 students did not reach the predetermined minimum score. With the minimum classical mastery criterion set at 80%, these results indicated that classical mastery learning had not yet been achieved in Cycle I. Therefore, improvements and refinements were required in Cycle II.

Cycle II was implemented as a follow-up to the reflection results from Cycle I. The improvements focused on enhancing the teacher's classroom management skills, clarifying apperception, increasing student learning motivation, optimizing group distribution, and encouraging active student participation in discussions and learning reflections. Observation results showed that teacher activity in Cycle II increased significantly to 93.26%, which was categorized as very good. All indicators of teacher activity were implemented optimally in accordance with the planned learning model procedures.

Student activity in Cycle II also showed a very significant improvement. The percentage of student activity reached 94.23%, which fell into the very good category. Students appeared more active, confident in answering questions, courageous in expressing their opinions, and fully engaged in the Talking Stick game and the use of Mystery Box media.

The improvement in teacher and student activities had a direct impact on learning outcomes. In Cycle II, the number of students who achieved mastery learning increased to 19 students (90.49%), while only 2 students remained incomplete. Thus, classical mastery learning was achieved because the percentage of students who completed learning exceeded the minimum threshold of 80%.

The results of the study indicate that the application of the cooperative learning model of the Talking Stick type assisted by Mystery Box media was able to significantly improve both the learning process and learning outcomes in IPAS instruction for fourth-grade students at MIN 21 Aceh Besar. This improvement was evident in teacher activity, student activity, and student learning outcomes, all of which showed substantial progress from Cycle I to Cycle II.

The increase in teacher activity reflects the teacher's success in managing learning more effectively after conducting reflection and making improvements in the previous cycle. The teacher became more systematic in delivering apperception, providing motivation, managing instructional time, and guiding students to participate actively. This finding is consistent with Bahri (2012), who states that the success of classroom action research is largely determined by the teacher's ability to continuously reflect on and improve instructional practices.

Student activity also increased significantly. The Talking Stick model combined with Mystery Box media was able to create an enjoyable and interactive learning atmosphere, thereby encouraging students to be more confident in speaking, expressing opinions, and actively engaging in learning activities. This finding is in line with the study by Damayanti et al. (2023), which reported that the Talking Stick model can enhance students' courage, communication skills, and involvement in learning through discussion and game-based activities.

In addition, the use of Mystery Box media played an important role in increasing students' curiosity and enthusiasm. This medium helped students connect learning concepts with concrete experiences, making learning more meaningful. This supports the view of Isjoni (2010) that cooperative learning packaged in the form of games can significantly increase student motivation and activeness.

The improvement in teacher and student activities had a direct impact on the improvement of learning outcomes. Student mastery learning increased from 57.14% in Cycle I to 90.49% in Cycle II, indicating the effectiveness of implementing the Talking Stick learning model assisted by Mystery Box media. Therefore, this learning model has been proven effective in improving IPAS learning outcomes for elementary school students.

## DISCUSSION

The findings of this classroom action research demonstrate that the integration of the Talking Stick cooperative learning model with Mystery Box media substantially improved both the learning process and learning outcomes in IPAS instruction for fourth-grade students. The progressive increase in teacher activity, student engagement, and mastery learning from Cycle I to Cycle II indicates that instructional innovation supported by reflective practice can effectively address low participation and achievement in elementary classrooms. This result reinforces the core assumption of classroom action research that systematic cycles of planning, action, observation, and reflection lead to continuous improvement in pedagogical quality (Kemmis & McTaggart, 2014).

The significant improvement in teacher activity from 71.15% in Cycle I to 93.26% in Cycle II highlights the importance of teachers' pedagogical competence in managing cooperative learning environments. Teachers' ability to conduct effective apperception, motivate students, organize heterogeneous groups, and facilitate reflective discussions played a central role in optimizing learning conditions. This finding aligns with Hattie's (2012) assertion that teacher clarity, classroom management, and instructional quality are among the most influential factors affecting student achievement. Furthermore, Bahri (2012) emphasizes that reflective teaching enables educators to identify instructional weaknesses and implement targeted improvements, which was evident in the refinement of teaching strategies between cycles in this study.

Student activity also increased markedly, from 70.19% to 94.23%, indicating that the Talking Stick model successfully promoted active participation and communication. Cooperative learning theory posits that structured interaction among students enhances engagement, responsibility, and academic performance (Johnson, Johnson, & Smith, 2014). By requiring students to respond when holding the stick, the model created equal opportunities for participation and reduced domination by more outspoken learners, thereby fostering inclusive classroom interaction. Similar results were reported by Damayanti et al. (2023), who found that Talking Stick-based instruction significantly improved students' confidence and oral communication skills through game-oriented discussion activities.

The improvement in students' confidence and willingness to express ideas can also be interpreted through the lens of social constructivist learning theory. Vygotsky (1978) argues that knowledge is constructed through social interaction and dialogue, particularly when learners actively articulate their understanding. The Talking Stick mechanism operationalizes this principle by transforming students from passive recipients of

information into active contributors to classroom discourse. Consequently, students' cognitive engagement increased, leading to deeper conceptual understanding and improved academic performance.

The role of Mystery Box media further strengthened student engagement by introducing elements of curiosity, surprise, and concrete experience into the learning process. According to Mayer's (2020) cognitive theory of multimedia learning, instructional media that stimulate multiple sensory channels can enhance attention and facilitate meaningful learning when appropriately integrated into pedagogy. Mystery Box activities required students to explore objects or question cards physically and cognitively, thereby bridging abstract IPAS concepts with tangible representations. This finding corroborates Siregar (2020) and Dianti et al. (2022), who reported that exploratory media improve students' motivation and comprehension by connecting new knowledge to real-life contexts.

The combination of cooperative interaction and engaging media resulted in a substantial increase in mastery learning, from 57.14% in Cycle I to 90.49% in Cycle II. This improvement exceeds the minimum classical mastery criterion of 80%, indicating that the instructional intervention was pedagogically effective. Slavin (2015) emphasizes that cooperative learning models are particularly effective in improving achievement when they incorporate individual accountability and group interdependence, both of which were embedded in the Talking Stick procedure. Each student was individually responsible for answering questions while simultaneously contributing to group success, thereby promoting both personal and collective learning responsibility.

Moreover, the integration of game-based elements through Talking Stick and Mystery Box supports previous research on gamified learning environments. Dichev and Dicheva (2017) argue that game mechanics such as turn-taking, challenge, and uncertainty increase intrinsic motivation and sustained engagement. In the present study, these elements helped reduce learning anxiety, encouraged participation among less confident students, and maintained attention throughout the instructional process. As a result, students demonstrated not only higher engagement but also improved academic outcomes.

From a methodological perspective, the iterative nature of the classroom action research design contributed significantly to the observed improvements. The reflection phase after Cycle I enabled the identification of instructional shortcomings, such as insufficient motivation strategies and limited classroom control, which were subsequently addressed in Cycle II. This process reflects the principle that effective professional development is embedded in teachers' daily practice and grounded in systematic inquiry (Avalos, 2011).

Despite its positive outcomes, this study is not without limitations. The research was conducted in a single class with a relatively small sample size, which may limit the generalizability of the findings. Additionally, the study focused on short-term learning outcomes; long-term retention and transfer of knowledge were not examined. Future research could involve larger samples, multiple schools, or experimental designs to further validate the effectiveness of the Talking Stick–Mystery Box combination across different educational contexts and subject areas.

Overall, the findings suggest that the cooperative Talking Stick learning model assisted by Mystery Box media constitutes an effective pedagogical approach for improving student engagement and learning outcomes in elementary IPAS instruction. By fostering active participation, social interaction, and meaningful learning experiences, this instructional strategy addresses both cognitive and affective dimensions of learning, thereby supporting holistic student development. These results contribute to the growing body of evidence supporting cooperative and media-assisted learning as viable strategies for enhancing instructional quality in primary education.

## CONCLUSION

Based on the results of the classroom action research that has been carried out, it can be concluded that the implementation of the Talking Stick type cooperative learning model assisted by Mystery Box media is effective in improving the quality of science learning for fourth grade elementary school students. Teacher and student activities experienced a significant increase from cycle I to cycle II until they reached the completed category. In addition, student learning outcomes also showed a real increase, from the incomplete category in cycle I to completed in cycle II. Thus, this learning model can be used as an alternative learning strategy that is able to increase student activity and learning outcomes.

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