



The Effect of the Student Teams Achievement Divisions (STAD) Learning Model through Jeopardy Game Media on Students' Problem-Solving Abilities

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Article Info	Abstract
Article history: Received: February 13, 2026 Accepted: April 25, 2026 Published: May 25, 2026	This study aims to examine the effect of the Student Teams Achievement Division (STAD) learning model, integrated with Jeopardy game media, on students' problem-solving abilities in Integrated Science and Social Studies (IPAS) at the elementary school level. This research employed a quasi-experimental design with a pretest-posttest control group. The research subjects were students of MIN Bima City. Data were collected using a problem-solving test as the main instrument. The data were analyzed using descriptive and inferential statistics to determine the significance of the differences between groups. The results showed that students taught using the STAD model through the Jeopardy game media achieved significantly higher problem-solving abilities compared to those taught using conventional methods. In conclusion, integrating the STAD learning model with the Jeopardy game media effectively improves students' problem-solving abilities and can serve as an alternative strategy for IPAS learning at the elementary level.
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INTRODUCTION

This research departs from the demands of the independent curriculum, which places problem-solving skills as one of the essential competencies of the 21st century (Funke et al., 2017; Kennedy, & Sundberg, 2020), especially in the learning of natural and social sciences (IPAS) in elementary schools. This ability is not only related to mastering scientific and social concepts but also to critical, creative, and collaborative thinking skills that are needed to deal with the real-life dynamics of students (Andini, 2025). Within the framework of the Pancasila Student Profile, social studies learning ideally encourages students to identify problems, propose hypotheses, analyze information, and formulate logical solutions to various phenomena around them. Along with the development of curriculum policy, IPAS is no longer oriented towards memorizing facts but towards an integrated process of investigation and problem-solving (Sari, 2025).

However, various studies show that the practice of learning science in the field is still dominated by lecture methods and individual assignments, so that high-level thinking activities, including problem-solving, have not developed optimally (Ramadhani et al., 2021; Saputri et al., 2021; Wati et al., 2021). As a result, many students are only able to solve routine and procedural problems but have difficulty when faced with contextual problems that require systematic reasoning and problem-solving strategies. Ideally, social studies learning requires an active, collaborative, and challenging classroom atmosphere in which students engage in group discussions, analyze natural and social phenomena, and

formulate solutions to problems relevant to their lives ([Barton et al., 2016](#); [Zevin, 2015](#)). Yet the facts on the ground show the gap between hope and reality.

In various elementary schools and Islamic school adrasas, teachers still rarely facilitate problem-based learning in a planned manner, so problem-solving skills have not been an explicit focus in science learning ([Azzahra et al., 2025](#)). This condition is also seen in MIN Bima City, the location of this research. Social studies learning in the classroom, the object of this research, is generally still centered on teachers, with lecture-style instruction, simple questions and answers, and routine practice questions. This limits students' opportunities to practice solving contextual problems and develop systematic problem-solving strategies ([Aditya et al., 2025](#)). Another thing that seems to be the tendency of some students is to be passive in the learning process, only taking notes and following the answers of friends who are more dominant when working in groups ([Suwarno et al., 2025](#)). This situation is reflected in learning outcomes, where students' achievement on indicators that require reasoning, causal analysis, and solution design to real problems tends to be lower than on indicators that only require the ability to remember and understand the facts of IPAS ([Savitri et al., 2021](#)).

Previous studies have shown that the Cooperative Type Student Teams Achievement Division (STAD) learning model effectively improves student learning outcomes and engagement across various subjects, including science ([Mukuka et al., 2024](#)). The STAD application has been shown to develop cooperation in heterogeneous groups, increase individual responsibility, and strengthen interaction among students during the learning process ([Ting et al., 2022](#)). Meanwhile, research on the media Jeopardy game in science/science learning shows that this game can increase activity, motivation, and conceptual understanding because it presents questions in an interactive, competitive quiz format. Jeopardy game. It also encourages students to study more earnestly to answer questions quickly and accurately in a fun atmosphere ([Kassab et al., 2022](#)).

In addition, several other studies combined cooperative learning models, such as the cooperative-type STAD, with various educational game media, such as snake and ladders or barcode cards, and found an increase in motivation, involvement, and student learning outcomes ([Putri & Kaivalya, 2024](#)). There are also studies that specifically examine the influence of the STAD model on problem-solving skills, especially in mathematics, and show significant improvements over conventional learning ([Putri & Kaivalya, 2024](#)). However, studies that explicitly integrate the STAD with the media Jeopardy game for learning integrated science and social studies, and that place problem-solving skills as the main focus, remain very limited, especially in the context of Madrasah Ibtidaiyah in Indonesia. This gap is the basis of the novelty of this research. Previous research on STAD in IPAS highlights improvements in students' learning outcomes, activities, or social skills without specifically sharpening problem-solving skills ([Nugroho et al., 2025](#)).

On the other hand, research on the Jeopardy game generally focuses on improving understanding of concepts and learning outcomes, but has not designed the game as an explicit vehicle to train the problem-solving stages within the cooperative framework, such as STAD ([Supratman et al., 2021](#)). Thus, the implementation of the STAD through the media in the subject of social studies, specifically aimed at developing students' problem-solving skills in MIN Bima City, represents a novelty both conceptually and practically.

This study is of great importance. If there is no more structured and interesting learning intervention, then the learning conditions of IPAS that tend to be passive and teacher-centered have the potential to continue, so that students' problem-solving skills remain low and less honed in dealing with real problems in their environment. Teachers will also lose one of the alternative models and concrete learning media to realize active, collaborative, and challenging IPAS learning, as mandated in the Independent Curriculum and Pancasila

Student profile. On the other hand, if the STAD model is implemented through the Jeopardy game media in MIN Bima City, teachers will have learning tools that combine heterogeneous group work, discussion, and individual responsibility in a fun, competitive-cooperative atmosphere. Students are not only encouraged to remember the facts of IPAS but also trained to analyze problems, formulate strategies for answering, and evaluate solutions through a variety of questions presented in a game format.

With that, it is hoped that there will be an increase in targeted, measurable problem-solving skills within the context of IPAS. Based on this description, the purpose of this study is to describe the implementation of the STAD -type cooperative learning model through the Jeopardy game media in science subjects at MIN Bima City, as well as to find out the extent to which the application of the model can improve students' problem-solving skills compared to the learning that teachers usually implement.

METHODS

Developing students' problem-solving abilities requires effective strategies that combine collaboration and interactive learning. The STAD learning model, integrated with the Jeopardy game media, offers an engaging approach to enhancing teamwork, accountability, and critical thinking. In schools like MIN Kota Bima, this method is expected to improve students' motivation and analytical skills. This study examines the effect of implementing STAD through Jeopardy games on students' problem-solving abilities, providing practical guidance for teaching and contributing to research on game-based collaborative learning. This study employed a quasi-experimental design to examine the effect of the STAD learning model, implemented through Jeopardy game media, on students' problem-solving abilities. The flow of this research is listed in Figure 1.

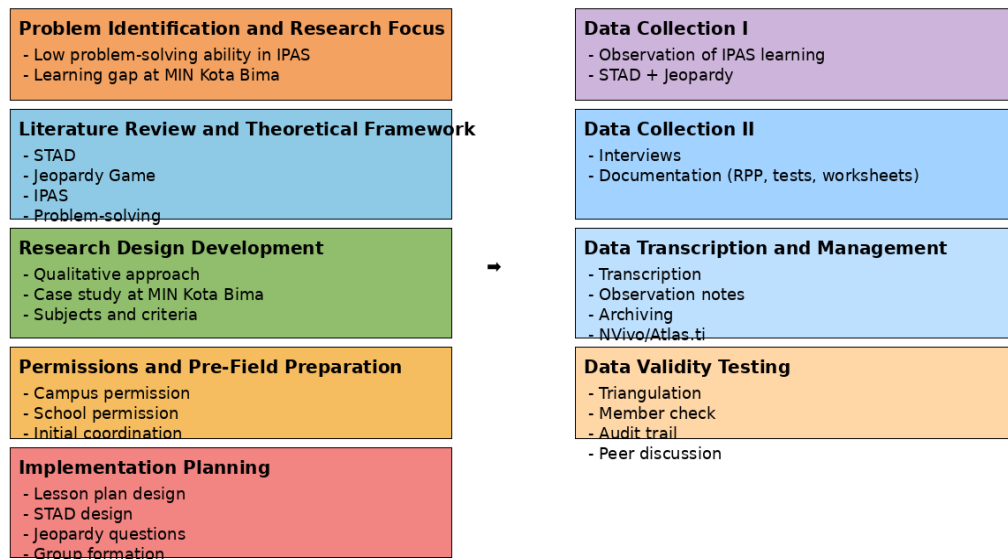


Figure 1 Research flow

This study employed a quantitative quasi-experimental design with a pretest-posttest control group approach. The design was chosen to examine the effect of the STAD learning model, integrated with the Jeopardy game media, on students' problem-solving abilities. The research was conducted at MIN Kota Bima and involved fifth-grade students. A total of 40 students were selected using cluster sampling, consisting of 20 students in the experimental group and 20 students in the control group. The experimental group received STAD with Jeopardy game media, while the control group followed conventional learning.

The main instrument was a problem-solving ability test, consisting of multiple-choice and open-ended questions to measure analytical and decision-making skills. The instrument was validated by experts and tested for reliability, achieving a Cronbach's alpha of 0.82. Data were analyzed using descriptive and inferential statistics. Descriptive statistics included mean and standard deviation, while inferential analysis used a t-test to compare pretest and posttest scores between the experimental and control groups. Normality and homogeneity tests were performed prior to analysis. The research procedure consisted of conducting a pretest, implementing the STAD learning model with Jeopardy game media for the experimental group and conventional learning for the control group, conducting a posttest, and analyzing the results. Each session in the experimental group followed STAD steps, including team formation, individual quizzes, group discussions, and reward allocation based on team achievement.

RESULTS AND DISCUSSION

This section presents research results from observations, interviews, and document analysis on students' problem-solving skills in science subjects, as well as the implementation of the STAD learning model using the Jeopardy game media in Class V at MIN Bima City. The presentation of the results focused on two main aspects: the portrait of students' problem-solving skills before and during the learning intervention, and how the implementation of STAD Jeopardy shaped the dynamics of students' thinking and interaction in solving IPAS problems. The results are first presented as a qualitative descriptive table to organize the main findings in a structured manner, followed by a narrative explanation that sharpens the meaning of the data in accordance with the research objectives. As shown in Table 1.

Table 1 IPAS problem-solving capabilities

Aspects observed	Ability of grade V students of MIN Bima City
Understanding the problem	Most students are able to repeat important information in the IPAS question and identify what is being asked, but there are still students who just copy the sentence of the question without really understanding the context of the problem.
Connecting information with IPAS concepts	Students have begun to associate daily events (e.g., changes in the shape of objects, weather, or the surrounding environment) with the concept of IPAS, but it is not consistent; some are still waiting for examples from teachers before daring to express their opinions.
Plan troubleshooting steps	In discussions, students often put forward initial ideas, but the steps for completion have not been arranged coherently; many groups still need teachers' guidance to determine the best strategies for answering more complex IPAS problems.
Implement a problem-solving plan	When the plan has been agreed upon, students are relatively able to follow the steps that have been discussed, but there are still simple mistakes, such as misinterpreting the data or rushing to conclusions without reviewing the reasons used.
Check and reflect on answers	Only some students consciously double-check answers, compare with other alternatives, or re-discuss when there is a difference of opinion; most still feel satisfied after finding one answer that their group considers correct.
Participation and courage to speak up	Student participation tends to increase when problems are presented in the form of stories close to their lives, but it is still seen that some students are passive and prefer to follow the decisions of the dominant peers in the group.

Based on Table 1, the problem-solving abilities of fifth-grade students at MIN Bima City show moderate development across all observed aspects. Most students are able to understand problems and identify key information, although some still rely on copying questions without fully grasping the context. Students have begun to connect real-life situations with IPAS concepts, but this ability is not yet consistent and often depends on teacher guidance. In planning and implementing solutions, students can propose initial ideas and follow agreed steps, but they still struggle to organize solutions systematically and often make simple errors. Additionally, only a few students actively check and reflect on their answers, indicating limited reflective thinking skills. Student participation improves when learning is contextual, although some remain passive and depend on more dominant peers. Overall, students' problem-solving skills are developing but still need improvement, particularly in systematic and reflective thinking.

Based on the results of observations, interviews, and student assignment documents, the problem-solving ability of students in class V of MIN Bima City in science subjects is generally at a developing level but not optimal. Students are sufficiently capable of understanding the problem's content and relating it to everyday experience, but still need help devising a coherent solution and considering various possible answers before making a final decision. In practice, students are stronger at understanding the problem and implementing the agreed-upon steps, but still weak at planning strategies and rechecking answers. This can be seen in their habit of immediately accepting the first answer that appears without engaging in reflection, as well as their tendency to rely on teachers' instructions when faced with open-ended IPAS questions or those requiring higher-order reasoning, as shown in Figure 2.

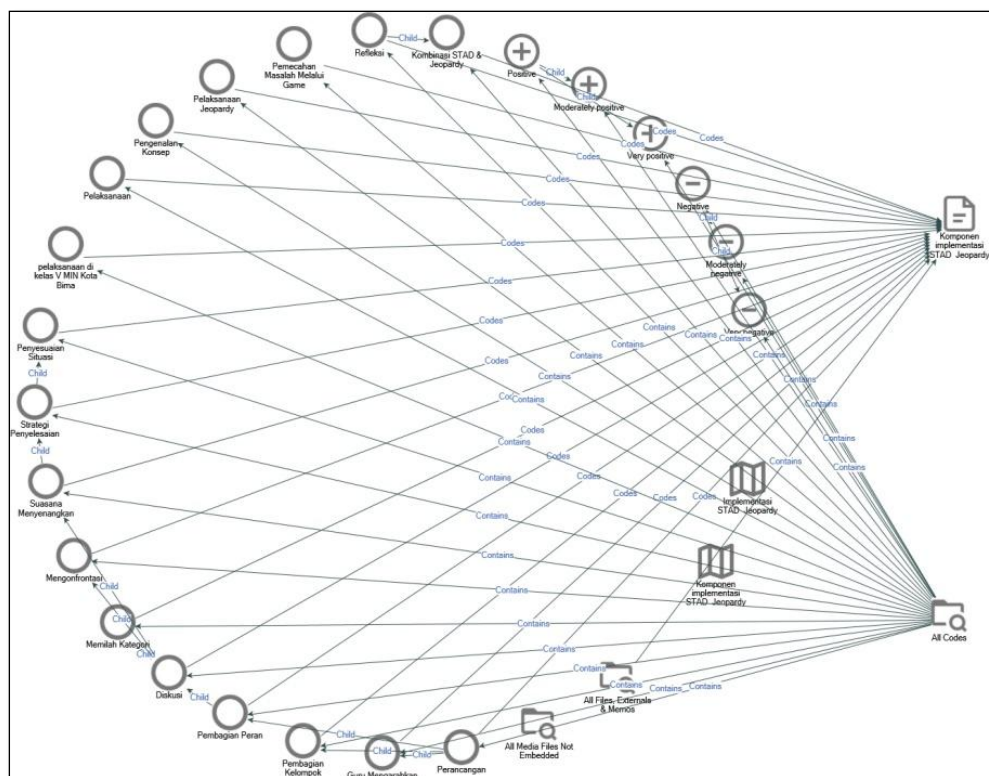


Figure 2 Visualization of STAD–Jeopardy implementation network in science learning

Figure 2 illustrates a network visualization of the STAD–Jeopardy implementation in science learning. The diagram shows the interconnected relationships between learning components, including students, teachers, learning activities, and assessment processes. Each node represents a key element, while the connecting lines indicate the interaction and collaboration that occur during the learning process. The visualization highlights how the STAD cooperative model combined with the Jeopardy method encourages active participation, group discussion, and knowledge exchange among students. It also reflects the central role of the teacher in facilitating and guiding interactions. Overall, this network demonstrates that learning is not a linear process but a dynamic, interconnected system that supports students’ engagement and understanding in science. The following is a more detailed explanation of the results of the STAD implementation analysis, and Jeopardy in Social Science Learning can be seen in Table 2.

Table 2 Implementation of STAD Jeopardy

Components of the Jeopardy STAD implementation	Qualitative description of implementation in Class V, MIN Bima City
Learning planning	Teachers develop IPAS lesson plans/teaching modules that integrate STAD steps with Jeopardy game sessions; problem-solving indicators are explicitly listed as learning objectives, and Jeopardy questions are designed as contextual problems.
Formation and dynamics of STAD groups	Students are divided into heterogeneous groups based on academic ability and character. In groups, there is a spontaneous division of roles: some students are dominant in reading questions, some propose answers, and some take notes, although the teacher still needs to direct all members to participate.
Implementation of class presentations and discussions	At the class presentation stage, the teacher briefly introduces the concept of IPAS and then relates it to the problems that will be played in Jeopardy. Class discussions are livelier when teachers give examples of problems that are close to students' lives, which encourages them to ask questions and share their opinions before getting into the game.
Implementation of the Jeopardy game in a group	During the game, each group discusses choosing a question category and formulating the best answer before time runs out. The competitive yet fun game atmosphere makes students more active in expressing ideas, challenging opinions, and explaining the logical reasons for the group's chosen answers.
Problem-solving exercises through games	Jeopardy questions are structured as problem situations so that students first need to understand the context, identify the important information, and choose the right way to solve it; in this process, they are seen improving their ability to explain the steps of their thinking and to agree on a joint solution strategy.
Reflection of teachers and students after learning	The teacher stated that combining STAD and Jeopardy makes it easier to observe how students solve problems openly in groups. Students admitted to feeling more excited and challenged because the group's success in the game depended on their accuracy and speed in solving problems, rather than just memorizing the material.

Based on Table 2, the implementation of the STAD Jeopardy model in class V MIN Bima City is carried out systematically from planning to reflection. Teachers have integrated STAD steps with Jeopardy game activities in the lesson planning, emphasizing problem-solving as a key learning objective. During the learning process, students work in heterogeneous groups, where interaction and collaboration naturally develop, although teacher guidance is still needed to ensure equal participation. Class presentations and discussions create an active learning atmosphere, especially when the material is linked to

real-life contexts. The Jeopardy game further strengthens student engagement by encouraging discussion, critical thinking, and quick decision-making within groups. Through problem-based questions, students practice understanding contexts, identifying key information, and determining appropriate solutions.

The implementation of the STAD learning model through the Jeopardy game media in class follows a sequence of stages: planning, group formation, game implementation, and reflection. In planning, teachers integrate indicators of problem-solving skills into learning objectives and design Jeopardy questions as contextual IPAS problems, so that each game session is also a problem-solving exercise for students.

In the implementation stage, the combination of STAD group work and the Jeopardy game format was proven to encourage students to more actively understand problems, discuss alternative solutions, and agree on answers based on accountable reasons. Interaction among students becomes more intense, especially when the group has to choose the best strategy immediately within a limited time, making their thought processes more explicit and observable. This condition provides space for students to practice the stages of problem-solving more fully, from understanding the problem to evaluating the answers, although reinforcement is still needed to ensure that all students are equally involved and not dependent solely on the more dominant members.

IPAS problem-solving skills of MIN students of Bima City in the theoretical and research landscape

The portrait of the problem-solving skills of grade V students at MIN Bima City who are "developing but not yet optimal" shows a typical pattern: strong in the stages of understanding and implementing, but fragile in the stages of planning strategies and rechecking answers. This pattern is almost parallel to the findings of various studies on the implementation of Pólya's problem-solving steps at the elementary school level, which show that the first two stages (understanding the problem and executing the plan) tend to be easier for students to master than the planning and reflection stages ([Firdaus et al., 2024](#)). Polya herself emphasized that the planning and re-examination phases are at the core of mathematical and scientific thinking, because it is in these two stages that students practice choosing strategies, testing hypotheses, and correcting mistakes.

Research applying Pólya's model of problem-solving (Pólya in elementary school) showed that when teachers explicitly guided students through these four steps, there was a significant improvement in students' ability to solve story and non-routine problems ([Triana et al., 2021](#)). Students not only get the correct answer more often but are also better able to explain how they arrived at the answer. Compared to this picture, the conditions in MIN Bima City show that some of Polya's steps have been carried out implicitly; for example, students have tried to understand the problem and execute the plan but have not been given explicit language and structure as a "thinking stage" that is practiced continuously. As a result, the ability to plan and re-examine answers develops sporadically, depending on the student's personal habits, rather than as a built classroom culture.

The finding that students are more likely to relate problems to IPAS concepts when the context of the questions is close to their lives aligns with the findings of various studies on the use of contextual problems and science-based approaches to everyday life. Research in several elementary schools shows that contextual problems related to students' real experiences, such as natural phenomena in the surrounding environment, are able to improve understanding of concepts and abilities in problem-solving. Compared to abstract questions ([Torres-Peña et al., 2025](#)). In your research, when IPAS is associated with changes in the shape of objects in the house, the weather in their area, or the conditions of the surrounding environment, student participation increases, the courage to relate concepts

to reality emerges, and the discussion becomes more lively. This confirms that problem-solving skills are inseparable from contextual relevance; students need a bridge between IPAS concepts and the world they experience.

The social and emotional dimensions that emerge in your findings, such as the presence of dominant students, members who tend to be passive, and the tendency to accept the first answer without reflection, are also in line with the literature on *cooperative learning* and the role of social interaction in the formation of thinking skills (Zagni et al., 2025). Johnson and Johnson stated that, without a cooperative structure, group discussions are easily caught up in a pattern of dominance and dependence, so that only some students really practice critical thinking, while others simply follow (Lin et al., 2021). Thus, the weakness of reflection and planning that appears in the profile of students' problem-solving ability is not only a problem of poorly trained individuals but also a reflection of class structure and interaction patterns that have not fully supported the equitable distribution of thinking experiences.

Compared with various science studies in elementary schools that report that traditional learning tends to produce students who are strong at memorizing concepts but weak at using those concepts to solve problems, the findings at MIN Bima City present a slightly different picture. The students here have shown embryonic ability to relate concepts to context and are able to work in groups to solve problems, but are still stuck in the habit of waiting for teacher validation and are reluctant to re-examine their thought process. This study, thus, reaffirms the criticism of learning that focuses too much on the final answer, while showing that with the right interventions, problem-solving abilities can be pulled up from purely procedural to more reflective.

STAD through Jeopardy Game: synthesis of cooperative theory, problem solving, and game-based learning

The implementation of STAD through the game Jeopardy at MIN Bima City can be understood as a meeting point of three major theoretical pillars: cooperative learning theory, the problem-solving model, and the game-based learning approach. In the classroom, these three pillars do not present as separate concepts but are integrated in a concrete learning experience, namely working in heterogeneous groups, solving IPAS problems, and competing healthily in a game setting.

From a learning perspective, cooperative STAD is one of the most researched types and has consistently been shown to improve student learning outcomes, motivation, and activity across a variety of subjects, including science (Rad et al., 2022). Tamimi (2024) affirmed that the strength of STAD lies in the combination of heterogeneous group work, individual responsibility, and group rewards based on improving member learning outcomes. Research in elementary schools shows that implementing STAD can increase the average science score and the percentage of learning completeness, as well as student activities such as asking questions, explaining, and discussing. The findings at MIN Bima City echo this pattern: heterogeneous groups form a space where students help each other understand the problem, Jeopardy, and divide the roles of reading, proposing, and criticizing answers while learning to balance dominant voices and opportunities for other members' participation.

Question positioning *Jeopardy* as a contextual problem, IPAS makes this game not just entertainment but a vehicle to bring Pólya's stages to life in the classroom. Each question requires students to understand the situation, identify important information, discuss alternative solutions, choose strategies, and decide on answers within a limited time. Research on Polya-based learning shows that when students get used to naming and passing these stages, their ability to solve non-routine problems improves, and they are better able to explain the reasons behind the steps taken (Szabo et al., 2020). In STAD Jeopardy, these

stages are not only undertaken individually but are also socially negotiated within the group so that the thinking process and problem-solving become more explicit and observable to the teacher.

Various studies prove that the use of Jeopardy in learning, in science, social studies, and language subjects, has a positive impact on motivation, activeness, and learning outcomes (Türkoğlu et al., 2024). Studies at the secondary level show that social studies instruction using Jeopardy, combined with small-group discussions and team-game tournaments, improves learning activities and student evaluation results compared to the usual lecture method (Muslim et al., 2024). At the elementary level, media development Jeopardy interactive presentation-based has proven to be practical, engaging, and effective in improving students' understanding of concepts because it blends text, images, and competition elements (Sari et al., 2021). Other research reports that learning strategies like Jeopardy increase student involvement in repeating material and train thinking speed (Triana et al., 2021). The experience at MIN Bima City is in line with these findings: a pleasant, competitive atmosphere encourages students who are usually passive to contribute, because the success of the group does not depend on one person alone but on speed and precision in solving problems together.

The integration of these three pillars, cooperative, problem-solving, and game-based learning, gives its own depth to the implementation of STAD Jeopardy at MIN Bima City. While much of STAD's research stops at improving grade point average or completion rates, and much of Jeopardy research stops at motivation and activity, this study goes a step further by highlighting how the combination of the two specifically shapes the problem-solving thinking dynamics of social studies students. For example, when students are forced to have a quick discussion before Jeopardy's time runs out, it is apparent how they negotiate strategies, reconsider answers, and learn from defeats or mistakes that occur openly in front of the class. Teachers, at the same time, get a rare opportunity to observe the contents of students' heads when they interpret the problem, rather than just looking at the final result on the answer paper.

In this study, it reinforces the findings that STAD and Jeopardy are separately effective for improving learning outcomes and activeness, while adding a new dimension: that when consciously designed to bring the Pólya stages to life and oriented to the contextual problems of IPAS, the combination of STAD and Jeopardy becomes a thinking laboratory that trains students through the entire problem-solving cycle more completely. This contribution is important, especially in the context of Madrasah Ibtidaiyah, which has not been highlighted much in the literature on STAD or game-based learning. This study expands the empirical scope and offers an implementation model that can be replicated or modified in other educational units with similar characteristics.

CONCLUSION

This study concludes that implementing the STAD learning model, integrated with Jeopardy game media, has a positive and significant effect on students' problem-solving abilities in Integrated Science and Social Studies (IPAS) learning at MIN Kota Bima. The findings indicate that this approach enhances students' engagement and participation while improving their ability to understand problems and apply appropriate solution steps. However, students still demonstrate limitations in strategic planning and reflective evaluation, indicating the need for further instructional support in these areas. This study is limited to a relatively small sample consisting of fifth-grade students at MIN Kota Bima, which may affect the generalizability of the findings. In addition, the study focuses only on problem-solving abilities measured through a specific test instrument, without considering other variables such as critical thinking, collaboration skills, or long-term learning

outcomes. Therefore, the findings imply that integrating cooperative learning models such as STAD with game-based media like Jeopardy can be an effective strategy to promote active learning and enhance students' problem-solving abilities. Teachers are encouraged to optimize group roles and incorporate structured reflective activities to strengthen students' higher-order thinking skills. Furthermore, this study provides practical insights for educators and contributes to the development of innovative, interactive learning strategies for IPAS instruction.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTIONS STATEMENT

Conceptualization, RU, U, and SR; methodology, RU; formal analysis, RU; investigation, RU; data curation, RU; writing—preparation of the original draft, RU; writing—review and editing, U and SR; supervision, U and S.R. All authors contributed substantially to the implementation of the STAD learning model through Jeopardy game media on students' problem-solving abilities and approved the final manuscript.

AI DISCLOSURE STATEMENT

The authors declare that this research on the implementation of the STAD learning model through Jeopardy game media on students' problem-solving abilities was prepared, researched, written, and edited without the aid of artificial intelligence (AI) techniques.

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