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The effectiveness of cooperative learning models in improving physical education learning outcomes in elementary schools: a systematic literature review

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ABSTRACT

Physical education in elementary schools still faces challenges in increasing student engagement and optimizing learning outcomes. This condition is often associated with the use of learning approaches that lack variety, resulting in learning activities that do not fully encourage collaborative student participation. Therefore, a study is needed to provide a comprehensive overview of the effectiveness of learning models that can improve the quality of the learning process. This study aims to analyze, critically review, and synthesize research findings related to the application of cooperative learning models in physical education for elementary school students. The study uses a Systematic Literature Review (SLR) approach by analyzing ten scientific articles published between 2020 and 2024 and obtained through the Google Scholar database. The subjects of this study were research articles discussing the application of various types of cooperative learning models, such as Student Teams Achievement Division (STAD), Teams Games Tournament (TGT), Jigsaw, Numbered Head Together (NHT), and Think Pair Share (TPS). Data collection techniques were carried out through a process of identification, selection, and evaluation of literature based on predetermined inclusion criteria. Data analysis was performed using qualitative descriptive analysis techniques to integrate and interpret the findings. The review shows that all five cooperative models improved physical education learning outcomes at the elementary school level, with the STAD type being the most frequently applied and consistently producing the clearest gains in students' scores and learning completeness. These findings confirm that cooperative learning is an effective and adaptable strategy for improving the quality of physical education in elementary schools.

Keywords: cooperative learning model; physical education; learning outcomes; elementary school

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Authors' Contribution : a – Study Design; b – Data Collection; c – Statistical Analysis; d – Manuscript Preparation; e – Funds Collection

INTRODUCTION

Education is a planned, systematic, and continuous process, with the main objective of developing the full potential of individuals so that they can function optimally in their personal and social lives (Varjao et al., 2022; Naro et al., 2023). Education is not limited to teaching and learning activities in the classroom, but includes all life experiences that can foster character, logical thinking, and social skills in students (Begel & Ko, 2019; Terziev, 2023). All forms of educational activities, both formal and non-formal, are an integral part of the educational process that contributes to the formation of a well-rounded individual (Eikeland et al., 2024; Jurczyszyn, 2024). In the national context, education also functions as a strategic tool in developing superior, creative, and competitive human resources, in line with the constitutional mandate to educate the nation (Quyet, 2024; Chhabaria & Bose, 2025). Thus, education becomes the main foundation for national progress because it is through this process that moral, social, and intellectual values can be developed in a balanced manner.

Physical education is an integral part of the overall education system because it plays an important role in developing the physical, mental, and social abilities of students (Stratton & Draper, 2018; Kodape, 2023). Through pedagogically designed movement activities, physical education helps students recognize their physical potential, train motor skills, and build sustainable healthy lifestyles (Singh, 2023; Ushtelenca et al., 2024). In addition, this subject also serves as a medium for instilling values such as cooperation, sportsmanship, discipline, and responsibility through competitive and collaborative activities (Chaudhary, 2024; Hananingsih et al., 2024). Thus, physical education is not only oriented towards physical activity, but also serves as an important means of shaping students' character and social skills in everyday life (Siddagoud & Sindhe, 2024; Huang, 2024).

In elementary schools, where children learn best through interaction and play, this character-building role of physical education is difficult to achieve through one-way instruction, so a learning approach that actively involves students working together becomes especially important. One approach that answers this need is cooperative learning. The cooperative learning model is an approach that emphasizes interaction and cooperation among students in small groups to achieve collective learning objectives (Johnson & Johnson, 2018; Bousalem et al., 2023). In its application, each group member is responsible for the collective learning outcomes, thereby creating positive interdependence and mutual respect. In this case, the teacher acts as a facilitator who designs learning situations that encourage discussion, knowledge sharing, and collaborative problem solving. The advantages of this model lie in its ability to increase learning motivation, strengthen conceptual understanding, and foster social skills that are important for student personality development, especially in the context of physical education, which is rich in teamwork and active collaboration (Juniar et al., 2023; Berabo et al., 2024).

However, in practice, physical education in elementary schools still faces a number of complex obstacles, particularly related to low student learning outcomes due to teaching strategies that lack variety (Endrawan et al., 2023; Putri & Bhakti, 2025). Some teachers still use a traditional, one-way approach that places students as passive recipients of information rather than active subjects in the learning process. This has an impact on decreased motivation, lack of participation, and limited mastery of motor skills that should be honed through interactive physical activities (Zhao, 2022; Micua et al., 2023). Limited innovation in learning methods also means that physical education objectives have not been fully achieved at the elementary school level.

One solution that is believed to overcome this problem is the application of a cooperative learning model that emphasizes collaboration and active student participation (Muliyardari et al.,

2024; Restalia et al., 2025). Through the formation of heterogeneous learning groups, students are given the opportunity to work together, help each other, and take responsibility for their group's results (Muawanah, 2023; Tanaya, 2023). The interaction process that is built not only increases understanding of movement concepts and sports techniques but also strengthens social values such as empathy, leadership, and solidarity. Thus, the application of the cooperative model in physical education learning is expected to create a more dynamic and enjoyable learning atmosphere, as well as foster students' independence and confidence in actively participating in class (Dyson et al., 2021; Irham et al., 2024).

Even so, the success of this model depends greatly on how teachers actually bring it into the classroom. However, the reality in the field shows that there are still many physical education teachers in elementary schools who have not fully implemented a student-centered learning approach (Feng, 2023; Pritchard & Dockerty, 2024).. Most of the learning process is still oriented towards direct instruction without much interaction or group work (Main & Prestridge, 2020; Kandya, 2023). This pattern of learning makes learning activities monotonous, boring, and unable to foster students' spirit of exploration (Schembri et al., 2021; Illahi et al., 2024). In fact, the characteristics of elementary school-aged children require a communicative, active, and experience-oriented approach to ensure their physical and social potential develops optimally (Fayzullayeva, 2024; Kuvnakova, 2024). Previous studies have shown that cooperative learning models have a positive impact on improving student learning outcomes in various subjects, including physical education. Daulay, (2022); Syuhada et al., (2025) reported that the STAD model improved students' learning outcomes in elementary physical education. Other studies by Adibah et al., (2023); Fataha & Gani, (2025) reported similar benefits from the Jigsaw model in building cooperation and individual responsibility among students.

Meanwhile, studies conducted by Mustamin, (2024); Febriyani et al., (2025) reported that the Think Pair Share (TPS) model created a more communicative learning atmosphere and encouraged students to participate more actively. Taken together, however, these studies each examined a single model within a limited scope, so a comprehensive synthesis that compares the effectiveness of different cooperative models in elementary physical education is still lacking. This gap is what the present review seeks to address.

The uniqueness of this study lies in its systematic approach in thoroughly and critically reviewing various literature on the effectiveness of cooperative learning models in improving physical education learning outcomes in elementary schools. Unlike previous studies that only focused on one type of model and a limited scope, this study combines various findings from different types of cooperative models to be analyzed in a comprehensive scientific framework. With this approach, this study is able to provide a complete picture of how cooperative models contribute to improving learning outcomes, both in terms of academics, motor skills, and the formation of students' social character. The novelty of this study lies in its attempt to thoroughly synthesize the results of recent studies (2020–2024) to produce a broader and more integrated conceptual mapping of the effectiveness of various types of cooperative models. This approach not only offers a summary of study results but also provides a new perspective on the patterns of success in applying cooperative models in the context of elementary school physical education, which has not been comprehensively discussed in previous studies.

The fundamental difference between this study and previous studies is the use of a systematic literature review method that emphasizes the process of identifying, analyzing, and synthesizing research findings in a structured manner. This approach allows researchers to examine previous research results more broadly and deeply without having to conduct direct experiments in the field. Thus, this study has the advantage of a more comprehensive scope of analysis and the ability to

produce stronger generalizations regarding the effectiveness of cooperative learning models in elementary schools. The results are expected to provide a richer understanding of the patterns of success of cooperative models in various physical education learning contexts.

The urgency of this research is very high because improving the quality of physical education in elementary schools plays a fundamental role in shaping children's character, fitness, and social and motor skills from an early age. Low learning outcomes in this subject indicate the need to renew teaching strategies so that learning is more effective, enjoyable, and meaningful. By analyzing various related studies, this study makes an important contribution to finding the best approach to improving the quality of physical education. This research is not only relevant to education practitioners, but also to policymakers and researchers who want to strengthen the pedagogical foundations in the development of active and collaborative learning models.

The main objective of this study is to analyze the effectiveness of cooperative learning models on improving student learning outcomes in physical education at the elementary school level using a systematic literature review approach. Through the collection, critical review, and synthesis of various previous studies, this study is expected to contribute theoretically to the development of effective learning models and practically to teachers in creating a more interactive, collaborative, and enjoyable learning process. The results are expected to strengthen the direction of physical education learning strategy development that is relevant to the needs and supports the realization of healthy, active, and characterful students.

METHOD

This study uses Systematic Literature Review (SLR) research by utilizing Google Scholar as the main source in collecting data related to Systematic Literature Review. The research process included several stages, starting from determining the topic focus, identifying relevant literature, selecting results based on specific criteria, compiling a synthesis matrix, to drawing conclusions from the findings (Garcia-Holgado et al., 2020; Maulana et al., 2024). After the data was collected, a descriptive analysis was conducted to describe the existing facts and provide a summary of the research results (Hazari, 2023; Rammal, 2023). All sources used in this literature review were obtained through Google Scholar as the main reference platform. The stages of the Systematic Literature Review (SLR) method include: (1) Determining the research topic and research question, namely how the application of cooperative learning models in physical education can improve student learning outcomes at the elementary school level; (2) Conducting a literature search with specific keywords through the Google Scholar database using predetermined keywords; (3) Selecting data based on predetermined inclusion criteria; (4) Analyzing research results by compiling a synthesis matrix of the results obtained; (5) Concluding the research findings. Figure 1 shows the steps.

The journal search reviewed in this study was sourced from the Google Scholar database. The sources analyzed were published in the last five years (2020-2024). Data collection was carried out in April 2025. The literature search focused on the keywords "cooperative learning model," "physical education lessons," "improving learning outcomes," and "elementary school." The selected articles must meet the following criteria: (1) The article discusses the application of cooperative learning models in physical education and its impact on student learning outcomes at the elementary school level; (2) The article was published within the last five years, between 2020 and 2024; (3) Only articles from scientific journals (not scientific works such as theses, dissertations, or dissertations) are included, available in full text, and freely accessible; (4) Articles written in either

Indonesian or English; (5) Articles are available in a downloadable format to enable further analysis. Figure 2 shows the article selection stages used in this study.

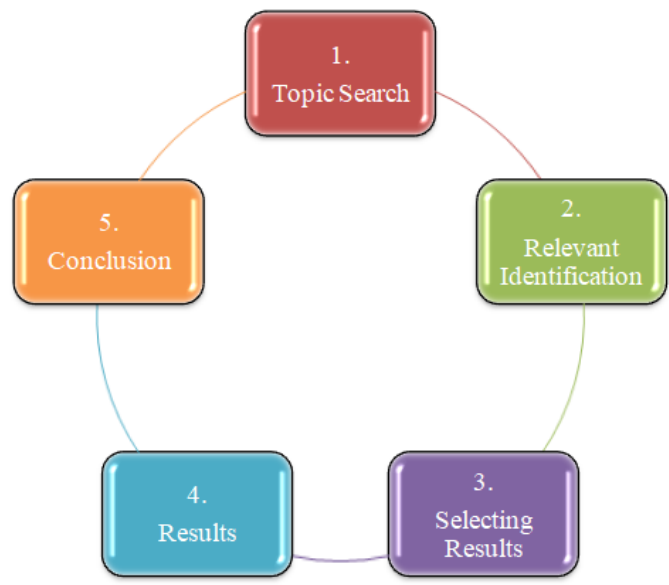


Figure 1. Stages of Systematic Literature Review (SLR) Research

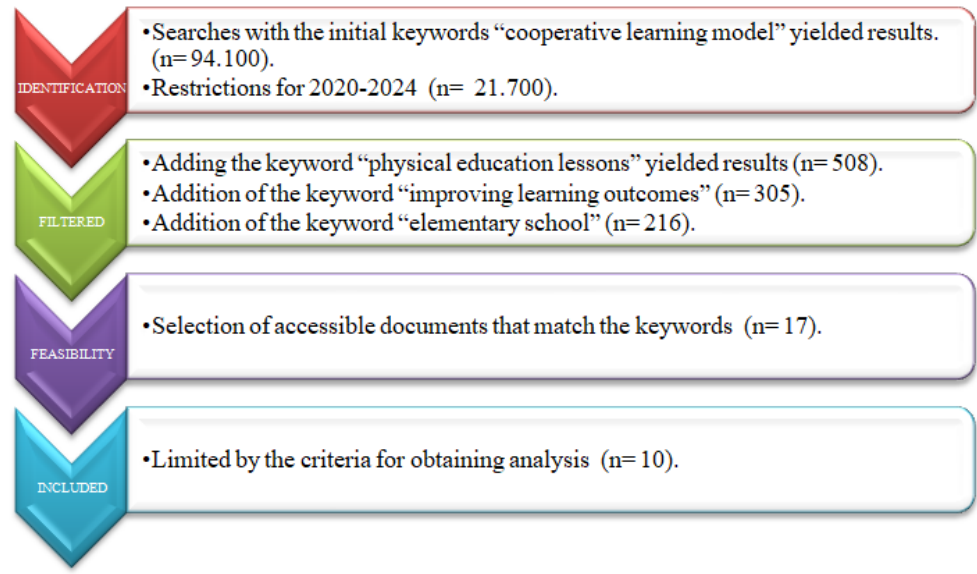


Figure 2. Article selection process

RESULTS

29

This study uses a Systematic Literature Review (SLR) approach, which refers to specific inclusion criteria that have been designed beforehand. Various articles used as study materials specifically discuss the application of cooperative learning models as a means to improve student learning achievement at the elementary school level. All data were obtained from searches using Google Scholar. In the initial search stage, namely Identification, the researcher used Google Scholar as the main source in exploring various articles related to the topic of cooperative learning models. The search process began by entering the keywords “cooperative learning model,” which yielded

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94,100 search results. Next, a selection was made based on the publication period between 2020 and 2024, resulting in 21,700 remaining articles.

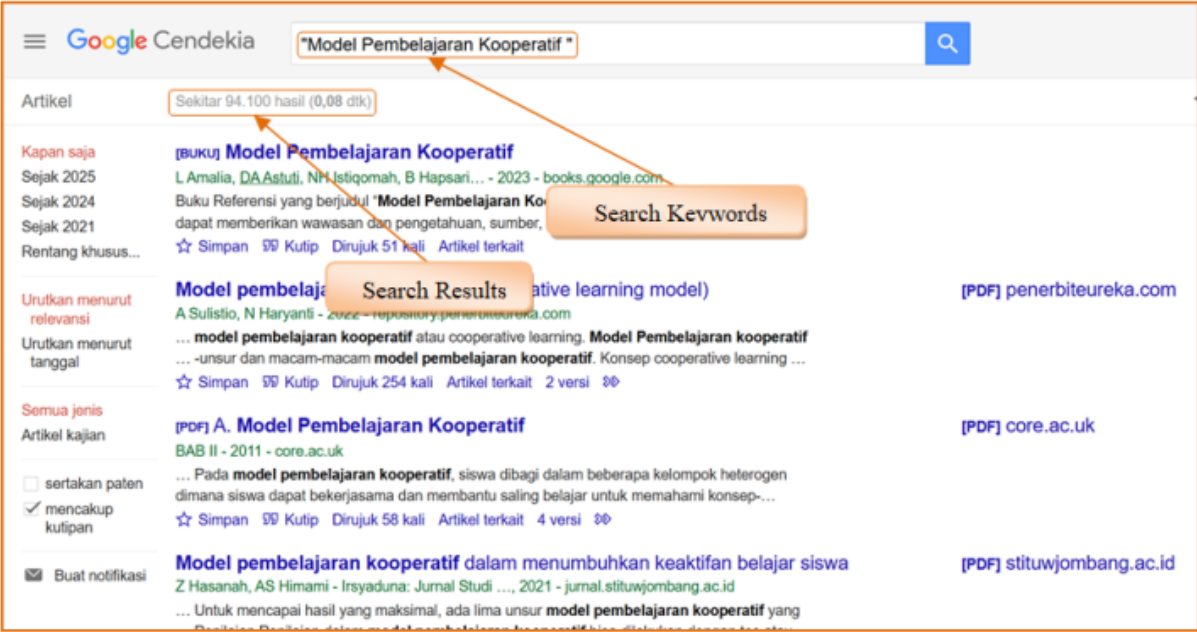


Figure 3. The identification stage of the “cooperative learning model” yielded results (n= 94.100)

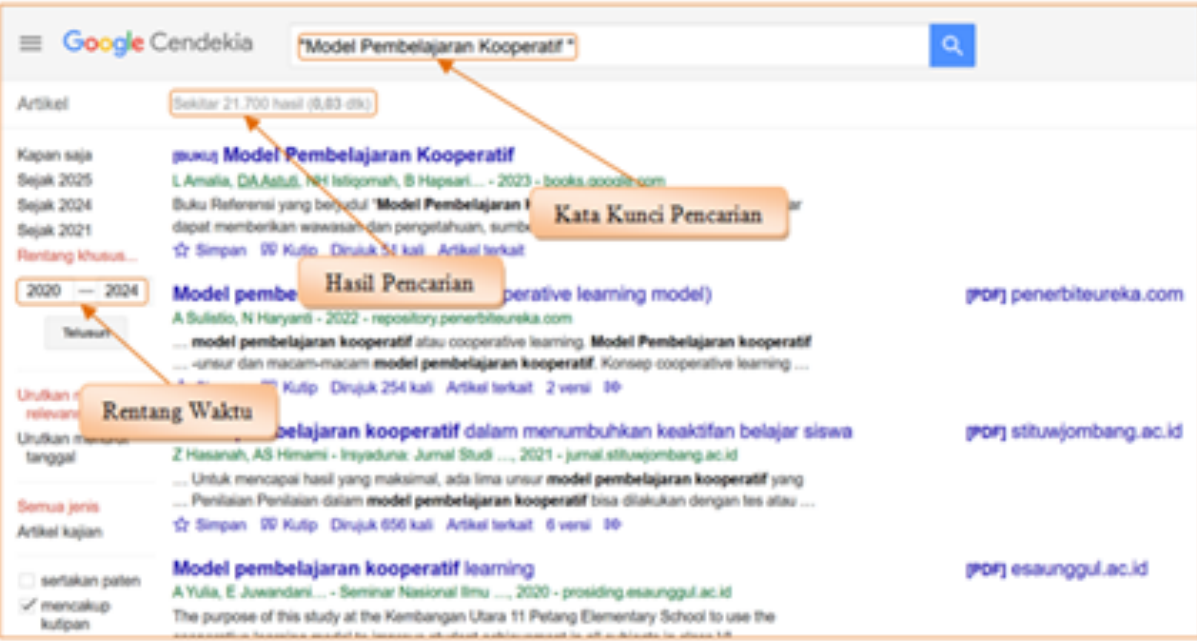


Figure 4. The identification stage adds restrictions on the year of obtaining results (n= 21.700)

At the screening stage, researchers added additional keywords to the literature search process. From the initial search, the additional keyword “physical education learning” was entered, which produced 508 articles. Then, to narrow down the search results to make them more relevant, the keyword “improving learning outcomes” was added, producing 305 articles. Finally, the keyword “elementary school” was added, producing 216 articles.

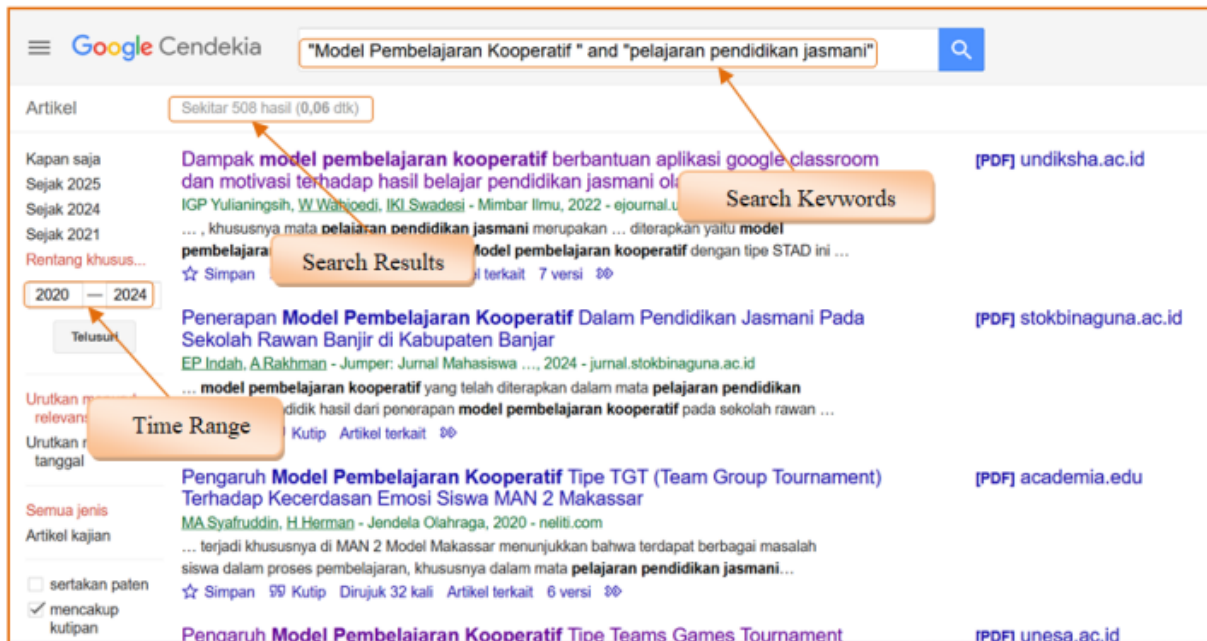


Figure 5. The filtering stage by adding the keyword “physical education learning” yielded results (n= 508)

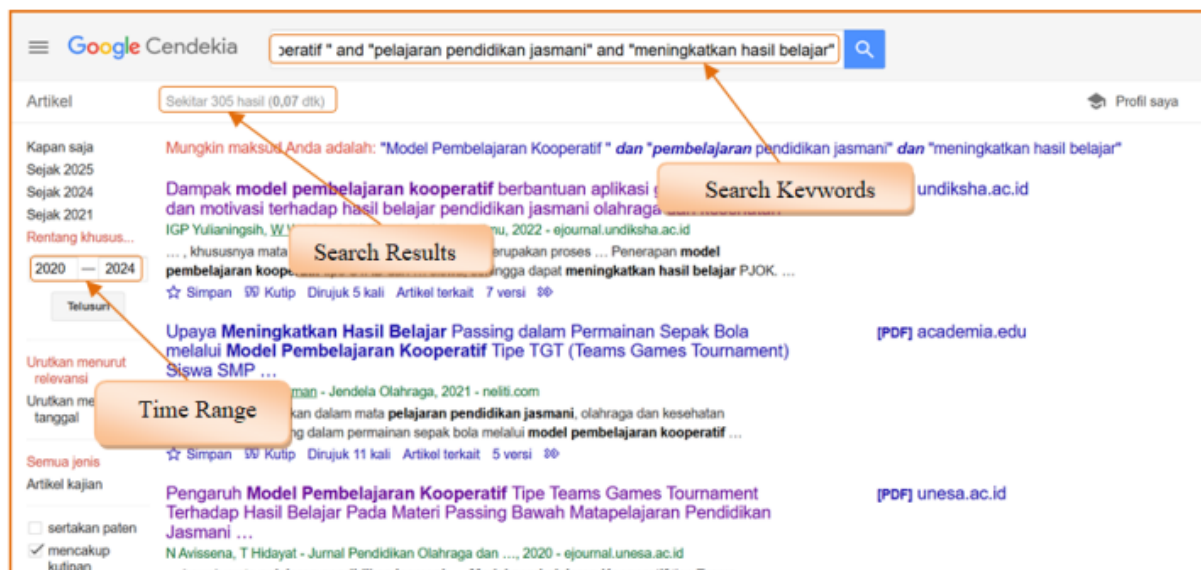


Figure 6. The screening stage by adding the keyword “improving learning outcomes” yielded results (n= 305)

Based on the graph showing the development of articles on cooperative learning models indexed in Google Scholar for the period 2020–2024, there is a fluctuation in the number of studies, but an overall upward trend. In 2020, there were 23 articles discussing this topic, then the number increased significantly to 47 publications in 2021. Furthermore, in 2022, there was a decrease in the number of articles to 25 publications, which can be understood as part of the natural variation in the development of scientific research in a field of study. However, in 2023, the number of publications increased again to 47 articles, indicating that academics' interest in the application of cooperative learning models in physical education remains high. The most notable increase occurred in 2024 with the number of publications reaching 72 articles, indicating that research interest in the cooperative learning approach is growing. In general, this trend shows that cooperative learning models are

gaining attention in educational studies, particularly in efforts to improve the quality of the learning process and encourage active student participation in physical education learning activities in elementary schools.

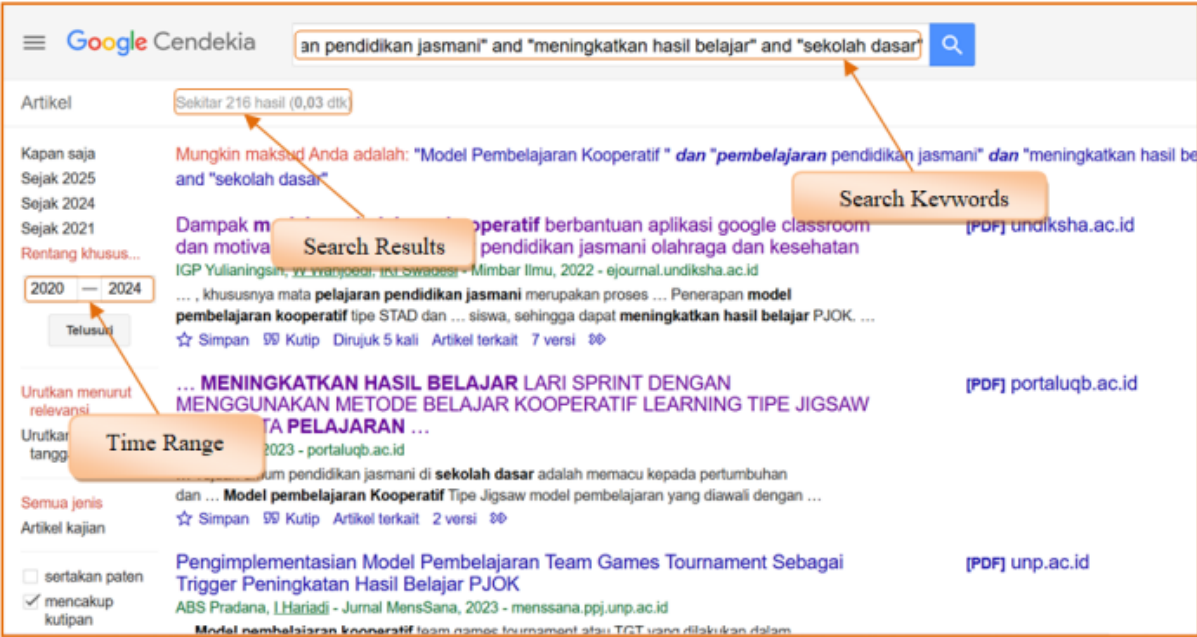


Figure 7. The filtering stage by adding the keyword “elementary school” yielded results (n= 216)

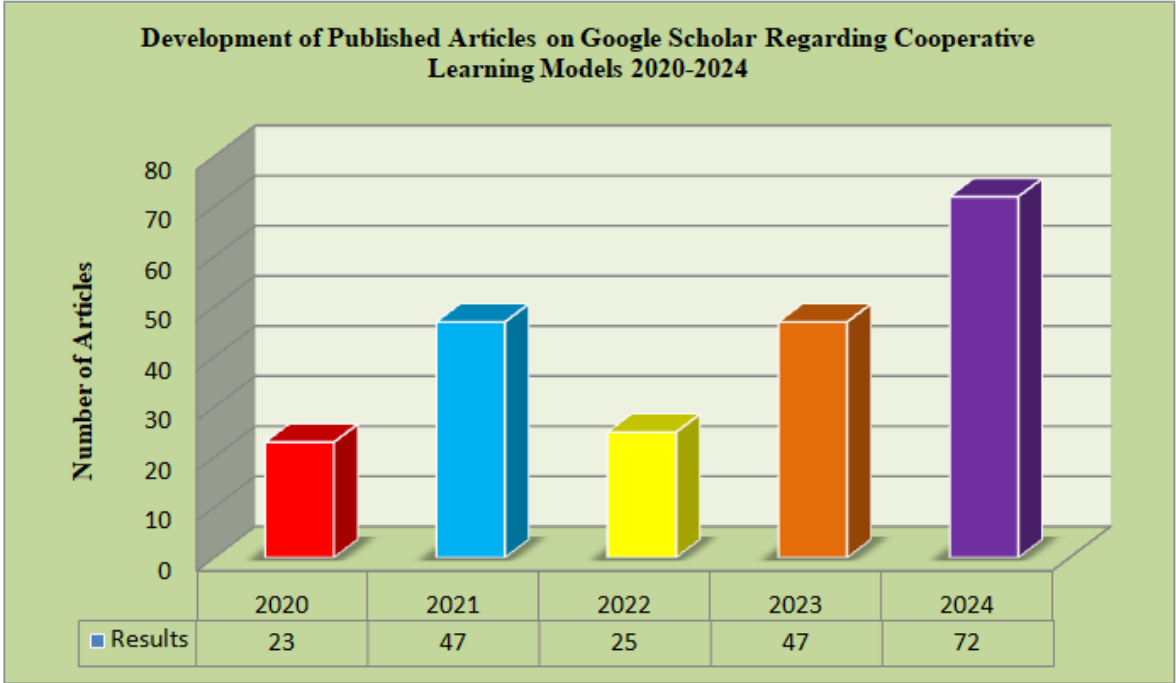


Diagram 1. Article development

Based on information obtained through a search of the Google Scholar database, the average number of scientific articles published each year during the period 2020 to 2024 is estimated to reach

around 43.2 publications. However, the citation rate obtained each year does not show a consistent upward trend, as the number of citations recorded fluctuates up and down in various years of observation. When calculated cumulatively over the last five years, the total number of citations collected from these publications reached 102 citations. To provide a clearer picture of this situation, the following graph illustrates the distribution of articles that received citations between 2020 and 2024.

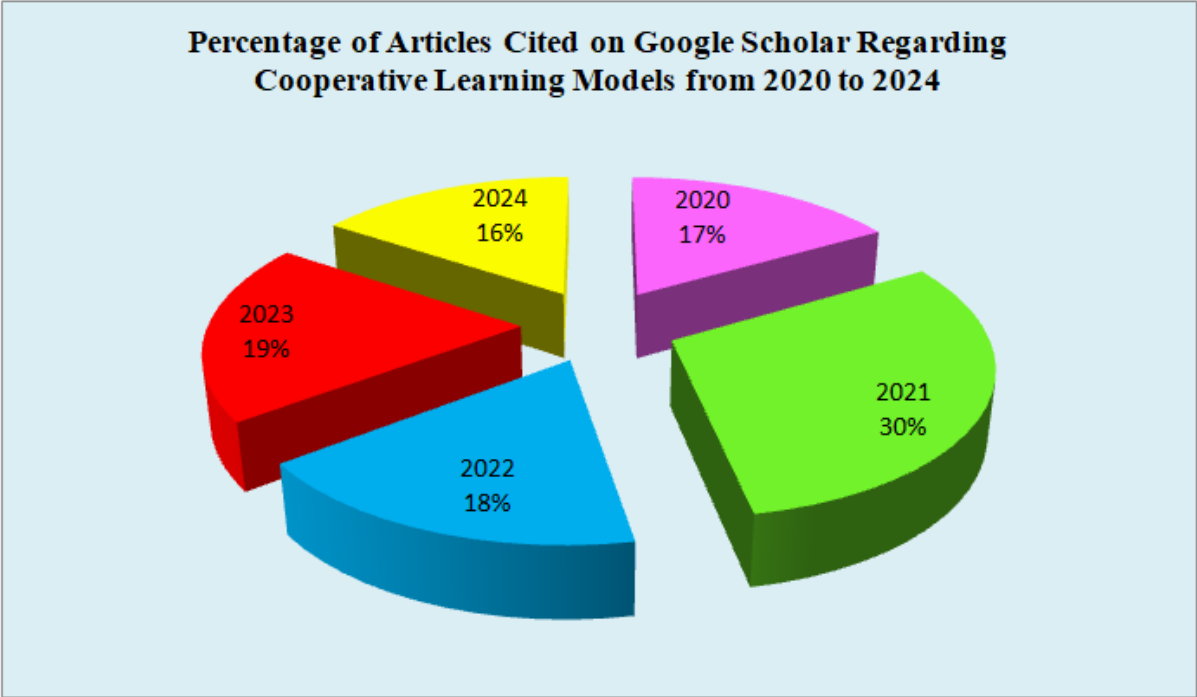


Diagram 2. Article citation

Based on the graph showing the percentage of articles cited on Google Scholar related to cooperative learning models during the period 2020–2024, there appears to be variation in the contribution of each year to the total publications analyzed. The year 2021 had the largest proportion with a percentage of 30%, indicating that during this period, research on cooperative learning models received considerable academic attention and was widely referenced in scientific studies. Furthermore, 2023 contributed 19% of the total cited articles, followed by 2022 with 18%, indicating that research in both years continued to make a significant contribution to the development of literature in this field. Meanwhile, 2020 had a percentage of 17%, indicating that research at the beginning of the observation period had provided a foundation for the development of studies on cooperative learning. The year 2024 recorded a percentage of 16%, which, although relatively smaller than other years, still shows the continuity of research focusing on the effectiveness of cooperative learning models. Overall, the distribution of these percentages shows that studies on cooperative learning in the context of physical education continue to grow from year to year and remain a relevant topic in educational research, particularly in efforts to improve the quality of the learning process and the active involvement of students in the school environment.

Table 1. Results Review of 10 Articles on the Effect of Cooperative Learning Models on Physical Education in Elementary Schools in the Google Scholar database.

No.	Article Title & Author	Research Method	Research Findings	Research Results
5	Application of the STAD Cooperative Learning Model to	Classroom Action Research	This study shows that the use of the STAD cooperative learning model can significantly improve student learning outcomes in	Research shows a significant improvement after implementing the STAD cooperative learning model over two cycles. In the first cycle, the

1	32	Improve Physical Education Learning Outcomes	Mardiana, (2022)	Physical Education, Sports, and Health subjects at SD Negeri 1 Batunya. Before the intervention, students' academic achievement levels were low, with an average score of only 59, a material absorption rate of 59%, and a student graduation rate of only 17%. These low learning outcomes were due to the suboptimal traditional learning methods used, which tended to create a boring classroom atmosphere with minimal social interaction. As a result, students became less motivated and reluctant to actively participate in the learning process.	average score of students increased to 71, and continued to increase to 85 in the second cycle. The students' learning success rate also increased significantly, from only 17% at the beginning to 61%, and then jumped to 94%. In addition, the students' mastery of the material or absorption rate also showed improvement from 59% to 85%. This proves that this cooperation-based learning approach is able to improve students' understanding of the material and their overall learning outcomes.
5	34	2. Application of TGT (Teams Games Tournament) and TGfU (Teaching Games for Understanding) Learning Models on Learning Motivation in Physical Fitness Skills Material	Alifia et al., (2023)	Quantitative research. This study reveals that the application of the Teams Games Tournament (TGT) and Teaching Games for Understanding (TGfU) learning models contributes significantly to increasing student learning motivation in the aspect of physical fitness skills. Based on the analysis results, the group guided using the TGT approach showed a higher average posttest score compared to the group using TGfU, with a more prominent surge in learning motivation. These findings indicate that collaboration- and game-based learning strategies can have a positive influence on student learning outcomes.	The study indicates a significant difference between the pretest and posttest results in both experimental groups. A p-value of 0.000 reinforces that the alternative hypothesis is accepted. The group that used the TGT model experienced an increase in average scores from 58.57 to 73.47, while in the TGfU group, the average score increased from 59.67 to 73.23. These results confirm that both learning approaches are equally effective in encouraging increased motivation and learning achievement among students in physical fitness material.
6	3	3. STAD Cooperative Learning Model to Improve Physical Education Learning Outcomes of Sixth Grade Elementary School Students	Tanaya, (2023)	Classroom Action Research This study shows that the implementation of the STAD cooperative learning model can significantly improve student learning achievement in Physical Education, Sports, and Health subjects among sixth-grade students at SD Negeri 6 Selat. In the initial stage (cycle I), the average score of students was 73, with a level of understanding of the material (absorption rate) reaching 73% and the percentage of students who met the learning completeness criteria was 60%. After evaluation and refinement of the strategy in the second cycle, a significant improvement was recorded, with the average student score rising to 81, absorption increasing to 81%, and all students achieving learning completeness (100%). This fact indicates that the application of the STAD cooperative approach is effective in encouraging student engagement and supporting the achievement of more optimal learning outcomes.	This study shows that the application of a group-based learning approach and collaborative interaction encourages students to participate more actively and understand the material in Physical Education, Sports, and Health lessons more easily. The significant improvement that occurred from the first cycle to the second cycle proves that the STAD model is able to overcome the limitations of traditional learning methods, which have been the cause of low learning achievement and lack of student involvement in the learning process. Overall, the results of this study provide strong support for the effectiveness of the STAD cooperative learning model as a strategic alternative for improving academic achievement and student motivation in elementary schools.
13	16	4. The Team Games Tournament (TGT) Cooperative Learning Model Improves Physical Education Learning Outcomes in Physical Fitness for Sixth Grade Elementary School Students	I Kadek Gunawan et al., (2024)	Experimental research. The application of the TGT (Teams Games Tournament) cooperative learning model has made a significant contribution to improving student learning outcomes in Physical Education, Sports, and Health subjects. Based on the data obtained, the average post-test score of students in the experimental class that applied the TGT model reached 84.54, which was significantly higher than the control class, which only obtained an average score of 66.61. This difference was reinforced by the results of statistical testing using an independent t-test, which showed that there was a statistically significant effect of using the TGT model on improving overall student learning outcomes.	This study shows that the TGT (Teams Games Tournament) cooperative learning approach has been proven effective in improving learning achievement and student motivation in participating in PJOK learning in sixth grade. Through fun games, group cooperation, and a positive competitive atmosphere, this model has succeeded in encouraging active student participation and strengthening their understanding of physical fitness concepts. Thus, the use of the TGT model can be considered as an innovative method that can have a positive impact on the quality of learning and improve student learning outcomes, especially in the field of physical fitness.
20	27	5. Improving Student Learning Outcomes in Grade 5 Large Ball Material Through the Application of Stad Cooperative Learning at SDN Lidad Kulon 1		Classroom Action Research Research indicates that the use of the Student Teams Achievement Division (STAD) cooperative learning method is effective in improving students' absorption of Physical Education, Sports, and Health subjects, especially on the topic of ball games. The average score of the pre-intervention evaluation was only 43.53, reflecting the low initial understanding of the students. However, after applying the model in the first	Based on the results of the study, the application of the STAD cooperative learning model has been proven to have a positive impact on improving student learning outcomes in physical education at SDN Lidad Kulon 1 Elementary School in Surabaya. The average test scores of students, which were initially only 43.53—categorized as very low—increased dramatically to 89.71 in the second cycle, which is categorized as very good. In addition, both individual and class learning

	Elementary School in Surabaya City		cycle, the score increased to 71.76, and experienced a significant jump in the second cycle with an average achievement of 89.71. In addition to the increase in scores, the percentage of student learning completeness also rose dramatically, from 23.46% in the initial stage to 93.87% at the end of the second cycle. This demonstrates the effectiveness of the STAD approach in supporting student engagement and mastery of the material.	completeness showed significant progress. This fact shows that team-based learning strategies such as STAD can effectively increase student motivation and academic achievement in the PJOK learning process.
	Atmojo et al., (2024)			
6.	Efforts to Improve Foot Passing Skills in Through Balls The Jigsaw Cooperative Model in Soccer Learning	Classroom Action Research	This study reveals that the use of cooperative learning models with a jigsaw approach can significantly improve the ability of fifth-grade students at SDN 1 Airlangga Surabaya to pass using the inside of their feet. Based on the observation results, there was a jump in the percentage of students who achieved learning completeness, from only 15.7% at the beginning to 75% in the implementation of cycle II. This achievement shows that the jigsaw method is effective in helping students understand the material while improving their practical skills.	The research indicates that student engagement showed a significant increase from one cycle to the next, with the quality of lesson planning in cycle II reaching an optimal level of 100%. Teachers' performance in implementing learning also experienced positive development, from only 47.22% in the initial stage to 97.23% in cycle III. Overall, the results of this study confirm that the use of a cooperative learning approach can improve the quality of classroom interaction and student learning outcomes.
	Muhammad Afif Nuruddin et al., (2024)			
7.	The Impact of Implementing the Stad Type Cooperative Learning Model on Improving the Physical Education Learning Outcomes of Elementary School Students Basic	Classroom Action Research	The implementation of the Student Teams Achievement Division (STAD) cooperative learning model has contributed significantly to improving the learning outcomes of sixth-grade students at SD Negeri 2 Kaliase. The effectiveness of this method is reflected in a consistent increase in the average learning scores, the level of material absorption, and the percentage of learning completeness, from the pre-intervention stage to the implementation in cycles I and II. The increase in learning completeness from only 13% to 96% illustrates that the STAD approach is capable of creating a more productive learning atmosphere and supporting students' understanding more comprehensively.	From the results of the study, it was found that in the early stages before intervention (pre-cycle), the average learning outcome of students was only 59, with a very low learning completeness rate of 13%. However, after the implementation of the STAD cooperative learning model, there was a significant improvement. In cycle I, the average score increased to 68 and the learning completeness rose to 48%. This progress was even more evident in cycle II, where the average score of students jumped to 84 and the percentage of learning completeness reached 96%. These findings indicate that the STAD method can have a significant positive effect on student learning outcomes.
	Kertya, (2022)			
8.	Students Teams Achievement Divisions Cooperative Model to Improve Learning Outcomes in Physical Education, Sports, and Health	Classroom Action Research	The implementation of the Student Teams Achievement Division (STAD) cooperative learning strategy had a significant positive impact on improving the learning outcomes of physical education subjects for fifth-grade students at SD Negeri 1 Beratan. Based on the analysis of the data obtained, there was a trend of increase in the average learning outcome scores, from 68.00% in the pre-cycle stage, rising to 72.70% in the first cycle, and reaching 79.30% in the second cycle. These achievements indicate that this model is effective because it is able to bring students into the category of good learning outcomes.	This study indicates a steady increase in student learning outcomes in physical education, particularly in ball kicking skills in soccer. In cycle II, the average student learning outcome reached 79.30%, which exceeded the minimum learning success threshold of 75%. This reinforces the evidence that the cooperative learning approach is effective in developing students' technical skills.
	Anom Susila, (2022)			
9.	Implementation of the NHT Cooperative Learning Model to Improve Learning Activities and Outcomes in Bullet Proofing for Fifth Grade Students at SD N 4 Padangkerta	Classroom Action Research	Research shows that the application of the Numbered Heads Together (NHT) cooperative learning model has a significant impact on increasing the activity and learning outcomes of fifth-grade students at SD Negeri 4 Padangkerta in the subject of projectile motion. Student learning activities showed consistent development from the first cycle to the second cycle, as reflected in the observation data collected during the research.	This study shows an increase in the percentage of student learning completeness, which grew from 94.74% in the first cycle to 97.36% in the second cycle. The overall average learning completeness rate reached 96.04%. This increase indicates that the NHT learning model is effective in improving student learning outcomes, while encouraging them to actively participate and collaborate with their classmates.
	Sumaeda, (2020)			
10.	Application of the Think-Pair-Share Cooperative Learning Model to Improve Learning Achievement	Classroom Action Research	This study reveals that applying the Think Pair Share (TPS) cooperative model improved the physical education learning achievement of sixth-grade students at SD Negeri 3 Bontihing. Before the intervention, students' achievement was low, with an	Research shows that the average student learning outcome score increased from 72.14 in the initial cycle to 78.53 in cycle I, and reached 85.58 in cycle II. In addition, the percentage of students who obtained scores above the minimum passing grade increased significantly from 48% to 100%.

in Physical
Education

I Gede Susila, (2022)

average score of 72.14 and only 48% of students meeting the minimum passing grade, largely because learning was still dominated by direct instruction with limited student interaction. The think, pair, and share stages gave students room to reason individually, discuss with a partner, and then present their ideas to the class, which encouraged more active participation and a better understanding of the material.

indicating the success of the TPS learning model in improving the quality of student learning outcomes.

Based on the results of a review of ten articles analyzed in this study, in general, all studies show that the application of cooperative learning models has a positive effect on improving learning outcomes in physical education in elementary schools. Various types of cooperative models used in the research, such as Student Teams Achievement Division (STAD), Teams Games Tournament (TGT), Jigsaw, Numbered Heads Together (NHT), and Think Pair Share (TPS), have been proven to encourage active student involvement in the learning process while strengthening their understanding of the material being studied. Findings from several classroom action studies show a significant increase in students' average scores, learning completion rates, and mastery of the material after the cooperative model was applied in several learning cycles. In addition, research using an experimental approach also shows that there are significant differences in learning outcomes between groups that use cooperative learning models and groups that use conventional learning methods. Not only does it have an impact on cognitive aspects, the application of this cooperation-based learning strategy has also been proven to increase learning motivation, student activity, and social skills in physical education learning activities. Overall, the findings from the ten articles reviewed show that the cooperative learning model is an effective approach in creating a more interactive, collaborative, and meaningful learning process, thereby contributing to improving the quality of student learning outcomes in physical education subjects at the elementary school level.

DISCUSSION

The synthesis of the ten articles analyzed shows that the application of cooperative learning models in physical education in elementary schools generally contributes positively to improving student learning outcomes. Findings from studies by Mardiana, (2022); Kertya, (2022); Anom Susila, (2022); Tanaya, (2023); Atmojo et al., (2024) show that cooperative learning models, particularly the Student Teams Achievement Division (STAD) type, can increase student engagement in the learning process through structured group work. Through these collaborative activities, students not only gain a better understanding of movement concepts but also actively engage in discussion and practice together. This pattern of findings reinforces the views expressed by Muliyardari et al., (2024); Restalia et al., (2025) that cooperative learning provides space for students to interact more intensively so that the learning process becomes more participatory and meaningful. In addition, the collaborative approach also allows students to help each other in understanding the material, as explained by Muawanah, (2023); Tanaya, (2023), who emphasize that cooperation in study groups can increase shared responsibility for learning outcomes.

On the other hand, research by Alifia et al., (2023); I Kadek Gunawan et al., (2024), which applied the Teams Games Tournament (TGT) model, showed that integrating elements of games and competition into learning can increase student motivation and participation in physical education learning activities. Through systematically designed game activities, students are encouraged to actively engage in the learning process while developing social skills through interaction with their group members. These results are in line with the views of Dyson et al., (2021); Irham et al., (2024), who state that physical education learning that emphasizes cooperation and active participation can create a more enjoyable learning experience while increasing student involvement in physical activities. Thus, the cooperative learning model not only plays a role in improving academic achievement but also contributes to the development of students' social and emotional aspects during the learning process.

Rudi Setiawan, Mela Suhariyanti, Yopi Hutomo Bhakti, Citra Azhariat Malasari.

The effectiveness of cooperative learning models in improving physical education learning outcomes in elementary schools: a systematic literature review | 187

Similar findings were also seen in the research by Muhammad Afif Nuruddin et al., (2024) who used the Jigsaw model, Sumaeda, (2020) who applied the Numbered Head Together (NHT) approach, and I Gede Susila (2022) who used the Think Pair Share (TPS) model. These three studies show that learning strategies that provide opportunities for students to discuss, exchange ideas, and present their thoughts to other groups can improve their understanding of the learning material. These activities help students to build more in-depth knowledge through social interaction that occurs during the learning process. These results are in line with the findings of Adibah et al., (2023); Fataha & Gani, (2025), who stated that the Jigsaw model can improve cooperation and individual responsibility in learning groups. In addition, these findings also support the results of research by Mustamin, (2024); Febriyani et al., (2025), which show that the Think Pair Share model can create a more communicative learning atmosphere so that students have more opportunities to express their ideas and improve their understanding through discussions with their peers.

Conceptually, the similarity in findings from various studies shows that the effectiveness of cooperative learning is closely related to increased social interaction in the learning process. This interaction allows students to build knowledge through a collaborative process that involves the exchange of information, clarification of concepts, and direct practice in learning activities. This also reinforces the view that passive, one-way instruction-oriented physical education learning tends to be less effective in improving student learning outcomes. This condition has been highlighted by Feng, (2023); Pritchard & Dockerty, (2024), who state that teacher-centered learning often results in low student participation in learning activities. A similar opinion was also expressed by Main & Prestridge, (2020); Kandya, (2023), who emphasized that a monotonous learning approach can hinder students' active involvement in the learning process. Therefore, the application of a cooperative learning model is one alternative strategy that can overcome these limitations by creating a more interactive and collaborative learning environment.

From a theoretical perspective, the results of this study make an important contribution to the development of studies on active learning strategies in physical education. Viewed through Vygotsky's social constructivism, these results are not surprising, because knowledge is built through social interaction and guided collaboration. The small heterogeneous groups used in cooperative learning give children the peer dialogue and mutual scaffolding that Vygotsky placed at the centre of learning, which helps explain why the reviewed studies consistently report gains not only in cognitive outcomes but also in social skills and confidence (Vygotsky, 1978). A synthesis of findings from ten articles shows that cooperative learning models not only have an impact on improving learning outcomes in cognitive aspects, but also contribute to the development of social skills, learning motivation, and students' confidence in participating in learning activities. These findings are in line with the views of Schembri et al., (2021); Illahi et al., (2024), who emphasize that learning approaches that involve active student participation can improve the overall quality of the learning experience. Furthermore, these results also support the opinions of Fayzullayeva, (2024); Kuvnakova, (2024), who state that elementary school-aged children need interactive and experience-based learning approaches so that their physical, social, and cognitive development can occur optimally.

However, this study has several limitations that need to be considered. This study only relied on ten articles obtained from one database, so there may be other relevant studies that were not accommodated in the analysis. In addition, most of the studies reviewed used classroom action research designs with relatively limited sample sizes, so generalizing the findings to a broader educational context requires further study. Differences in school conditions, student characteristics, and teacher readiness in implementing cooperative learning models may also influence the results obtained in each study. Therefore, further research is recommended to expand the literature sources by utilizing various international scientific databases and using more diverse research designs, such as large-scale experiments or longitudinal studies that allow for analysis of the long-term impact of implementing cooperative learning models on the development of students' motor, cognitive, and social skills.

Overall, the results of this study provide practical implications that physical education teachers need to consider using cooperative learning models as a learning strategy that can improve

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CITIUS: Jurnal Pendidikan Jasmani, Olahraga, dan Kesehatan, Vol. 6 No.1 2026, 176-193

the quality of the learning process in elementary schools. This approach not only helps students understand the material more effectively, but also encourages the development of cooperative attitudes, responsibility, and active participation in learning activities. Thus, the application of cooperative learning models can be an innovative alternative in improving the quality of physical education learning while supporting more comprehensive student development.

CONCLUSION

Based on the synthesis of the ten articles analyzed, this study indicates that the application of cooperative learning models in physical education in elementary schools tends to have a positive contribution to improving student learning outcomes and their involvement in the learning process. Various cooperative models used in the study, such as Student Teams Achievement Division (STAD), Teams Games Tournament (TGT), Jigsaw, Numbered Heads Together (NHT), and Think Pair Share (TPS), generally showed a tendency to encourage active participation, strengthen interactions between students, and assist the process of understanding material through collaborative learning activities. These findings indicate that learning that provides space for cooperation and communication among students has the potential to create a more participatory learning experience compared to teacher-centered learning approaches. Overall, the results of this study indicate that cooperative learning models have the potential to be one of the relevant learning strategy alternatives to improve the quality of physical education at the elementary school level. However, considering that this study is based on a literature analysis limited to a number of specific articles, the interpretation of the results needs to be understood carefully. Further research is recommended to expand the scope of the study by involving more literature sources and combining a literature review approach with empirical research in the field, so that a more comprehensive understanding of the effectiveness of the cooperative learning model in the context of physical education can be obtained. Several priorities can be considered to improve the quality of physical education in elementary schools. First, teachers can strengthen collaboration-based learning by designing activities that let students work together, discuss, and help one another understand the material. Second, schools can support better teaching practice through training or professional development focused on innovative learning models, including cooperative approaches in physical education. Third, developing learning resources that support group work can enrich students' learning experiences. In applying these recommendations, each school still needs to consider its own conditions, such as the availability of facilities, the number of students, and teachers' readiness to use cooperative learning.

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CONFLICT OF INTEREST

The authors state that there is no conflict of interest in this study.

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