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Increase Activity, Critical Thinking Skills and Student Collaboration Using the PERMATA Model and Wordwall Media in Elementary Schools

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Abstract

*This research raises the problem of low critical thinking skills and student cooperation in science and science lessons in elementary schools due to learning that is not focused on students and the use of learning models is still lacking. This problem can be overcome by implementing a combination of learning models, namely the PERMATA model (**P**roblem Bas**E**d Lea**R**ning, SAVI (So**M**atic, Auditory, Visu**A**lization, dan Intellectually), dan **T**wo Stay Two Str**A**y) and Wordwall Media. The aim of this research is to describe the improvements that have occurred in activities, critical thinking and collaboration skills, as well as the learning outcomes obtained by students. This research applies PTK research or classroom action research with fourth grade students at SDN Terantang 2 who act as research subjects. The method used is a qualitative and quantitative approach. The results of the research concluded that during the 4 meetings there was an increase in teacher activity with very good criteria, student learning activity increased from less active to very active, students' critical thinking and collaboration skills increased from less skilled to very skilled, and student learning outcomes increased. Based on the findings, it can be concluded that the use of the PERMATA model and Wordwall media is effective in increasing activity, critical thinking and collaboration skills, as well as student learning outcomes. The results of this research are recommended as reference material for similar research in efforts to improve the quality of learning in elementary schools.*

Keywords: *Critical Thinking, Collaboration, PERMATA Model, Wordwall Media*

INTRODUCTION

One of the main causes of change has occurred in various sectors of life is technology. The development of the era that has reached the era of revolution 4.0 and society 5.0 demands an increase in the quality of human resources. Quality human resources come from the world of quality education, this is proven by the increasing quality of education, the quality of human resources also increases because with quality education, people will be formed who have skills, have noble and dignified character, have creativity, are sensitive and understand the environment and are ready to face the challenges that will occur in the future.

The era of revolution 4.0 is known as the 21st century. The popular 21st century has brought rapid changes to science and technology which have developed from time to time. The rapid development of the times requires humans to master 21st century skills known as the 6Cs, namely character, citizenship, creativity, critical thinking, communication and collaboration.

Efforts that can be made so that humans are able to master the 6C skills are through education. Education is a forum for humans to develop themselves by learning so that they master a variety of knowledge. Humans go through a series of educational processes in long stages and start with basic education as a start for humans to learn various things that will become habits in the future. Basic education can be achieved through elementary schools, currently education in elementary schools has implemented an independent curriculum as an answer to the challenges that students must face and master. An independent curriculum offers students freedom based on their desires or interests and talents to learn

with the help of teachers as directors and facilitators.

The independent curriculum has a lot of subject content, Science or Natural and Social Sciences is one of them. Science and Technology is the result of curriculum development by combining science and social studies content in learning into one theme with the aim of fostering students' curiosity about events occurring around them so that it can encourage students to understand the interactions of human life on earth and how the universe works. Science learning requires students to gain experience and knowledge through experiences that are developed in accordance with the development of their thinking because each student has their own uniqueness.

The 21st century skills that students must master in science subjects are critical thinking skills. Critical thinking skills are the ability to use reason to process all forms of information obtained through observation or experience as a basis for action (Noorhapizah et al., 2019). Critical thinking and IPAS have an attachment that is difficult to separate. Through critical thinking, students can understand the material studied in the science course content, besides that, through a series of activities in scienceas learning, they can train critical thinking skills. This concludes that there is a mutual correlation between critical thinking and science learning because they need each other and are continuous.

Ennis classifies 12 indicators of critical thinking which he groups into 5 activities, namely (1) Providing a brief explanation; (2) Building basic skills (3) Making conclusions; (4) Provide further explanation; (5) Set strategy and tactics. Meanwhile, Suriansyah et al (2022) suggest that critical thinking has indicators, namely questioning, argument analysis, answer and challenge, concluding the argument and solution, interpreting fact (concluding the argument and solution). interpretation of facts), evaluate (evaluation), and distinguish the relevance of the argument (distinguish relevant arguments)

Apart from critical thinking skills, science learning also requires students to have collaboration skills. Humans cannot live alone but need the help of others to survive because humans are considered social creatures. Collaboration is a form of social interaction carried out by someone in a group to discuss and exchange ideas to draw conclusions. Suriansyah et al (2022) stated that Collaboration or cooperation has indicators, namely contributing, working productively, being responsible, flexible, and respecting others.

Meanwhile, Agusta et al (2018) concluded that indicators of collaboration skills compiled based on research from several experts include collaborative (working together with colleagues in a group), contribution (contributing thoughts in the form of ideas or suggestions and solutions), communication (receiving and providing information by clear by establishing communication within the group), caring (responsible for dividing tasks and caring for others), responsive (showing good responses despite differences in opinions and actions), and participative (always involved in the process of deciding and collecting data in the group).

The ideal conditions for science and science learning in elementary schools should be student-centered, highlighting 21st century skills, developing and training students' creativity levels, carrying out learning activities in fun and meaningful conditions so that students are actively involved in learning. However, the reality in the field is the opposite of ideal conditions, causing learning to become monotonous and not varied, students are not active in learning because they use the lecture method so it can be seen that during questions and answers students tend to be passive in both asking and answering questions, students also quickly feel bored in learning due to teachers do not use learning models, even though learning models have become an important aspect of learning as a fun learning method so that students' ability to understand the material is maximized.

If this situation is left as it is, it will have a bad impact on learning which becomes boring and passive, students are not used to thinking critically and working together as a result of monotonous learning and lack of

group learning activities, students easily forget the material being studied, which has a negative impact on achievement. Student learning outcomes in science and science lessons are not optimal, and make students unenthusiastic and less interested in learning so that learning becomes unpleasant and meaningless, even though science is a learning innovation in the independent curriculum that trains students to master critical thinking and collaboration skills and provide a meaningful learning experience.

Based on the problems above, to overcome the low level of student participation in learning, increase student participation and enthusiasm for learning, improve critical thinking and collaboration skills, and create a fun and meaningful learning environment, it is necessary to create an innovation in learning, namely by implementing a combination of learning models and using interesting learning media. The PERMATA learning model and Wordwall Media are here as an answer to the above problems.

The PERMATA model is an innovative learning style that was created to provide exciting and enjoyable learning activities by combining several existing learning models and paying attention to each characteristic and uniqueness of each model to create a new learning model. The PERMATA learning model is a combination of Problem Based Learning (PBL), Somatic, Auditory, Visualization, Intellectually (SAVI), and Two Stay Two Stray (TS-TS) models. It is hoped that the presence of this learning model can be a solution to problems that have become learning problems that often occur in the classroom, namely to increase student learning activities, critical thinking skills and collaboration, as well as improving student learning outcomes.

The PERMATA learning model consists of 12 learning steps, namely (1) the teacher explains the learning objectives (PBL and SAVI); (2) convey the material to be studied (PBL and SAVI); (3) showing learning videos (SAVI); (4) guiding groups (PBL, SAVI, and TS-TS); (5) the teacher presents problems using wordwall media (PBL and SAVI); (6) guiding students to solve problems (PBL and SAVI); (7) observing and guiding group student activities (SAVI and TS-TS); (8) students explain the results of the visit in groups (SAVI and TS-TS); (9) random group presentation appointed by the teacher (PBl and SAVI); (10) draw conclusions about the lesson material (SAVI and TS-TS); (11) distribute evaluation questions (PBL and SAVI); and (12) providing reflection and follow-up (PBL and SAVI).

This research received support from several similar studies, such as research conducted by Ayuni and Noorhapizah (2023) which examined improving students' collaboration and critical thinking skills using the PROGRES Model and TTS Media in elementary schools, research conducted by Khairunnida et al (2023) which examined increasing activity and learning outcomes by implementing a combination of PBL, SAVI and Talking Stick learning models in elementary schools, and research conducted by Astuti et al (2024) which examined the application of the Two Stay Two Stray model in elementary schools with science content.

The aim of this research is to describe the increase in teacher teaching activities and student learning activities, describe the increase in students' critical thinking and collaboration skills, and analyze the increase in student learning outcomes in carrying out the science and science learning process by applying the PERMATA and Wordwall Media learning models to class IV students in Terantang 2 Elementary School.

RESEARCH METHODS

This research uses the type of Classroom Action Research. According to Suriansyah, quoted from Noorhapizah et al (2019), PTK is research carried out in the classroom as an effort to improve the quality of learning in the classroom so that it improves better. PTK is interpreted as a stage of studying problems that occur in the classroom related to learning as an effort to overcome problems through self-reflection by carrying out a series of actions that have been arranged in such a way.

This PTK was carried out at SDN Terantang 2 for class IV students totaling 12 students consisting of 8 male students and 4

female students. The object of the research is improving students' critical thinking skills and collaboration on the science content topic CHAPTER 6 "My Indonesia is Rich in Culture" material by implementing the PERMATA learning model and Wordwall media.

In the aspect of critical thinking skills, students carry out activities to observe and examine the implementation of the learning process by applying the PERMATA learning model and Wordwall media. The indicators observed in students' critical thinking skills are providing a brief explanation; build basic skills; make conclusions; provide further explanation; organize strategy and tactics.

In the aspect of student collaboration skills, activities are carried out to observe and review the implementation of the learning process by implementing the PERMATA model and Wordwall media. The indicators observed in cooperation skills are being able to take responsibility for the group, being able to respect the existence of other students in the group, being able to contribute to each other in providing thoughts and opinions openly, being able to work together optimally with group members in completing assignments, and being able to socialize with other group members, communicate openly and participate.

Research data was collected using observation and interview techniques. Observations are carried out to describe each activity carried out and analyze the improvements that occur on the observation sheet as a tool. Interviews were conducted with the homeroom teacher as an observer to collect information directly by means of question and answer. Qualitative data was obtained through observation sheets of teacher teaching activities, student learning activities, critical thinking skills and student collaboration. Meanwhile, quantitative data is obtained based on student learning outcomes through individual tests in the form of evaluation questions at the end of learning and group tests in the form of group work width during learning. Data analysis in this research was carried out descriptively qualitatively and cross tabulation which was described in the form of tables, graphs and interpreted with percentages. Data analysis was carried out by grouping the data into 5 assessment criteria with indicators of success in teacher activities achieving a score range of 39-48 with very good criteria, student activities reaching a score range of 30-36 with very active criteria, critical thinking and collaboration skills reaching a score range of 16- 20 with very skilled criteria and student learning outcomes obtained a score higher than the KKTP, namely 70.

RESULTS AND DISCUSSION

Implementing the PERMATA learning model and Wordwall media in the learning process which was carried out over 4 meetings, the results of the data obtained were obtained through observation sheets which were then described and analyzed as well as reflections were carried out at each meeting, presented in graphic images of trends in all aspects below.

Table 1
Research Results for All Aspects

	PT 1	PT 2	PT 3	PT 4
Teacher Activities	79%	89%	94%	96%
Student Activities	58%	75%	83%	92%
Critical Thinking Skills	50%	58%	75%	83%
Teamwork Skills	58%	67%	92%	100%

The table above shows that the teacher's activities in implementing the PERMATA model and Wordwall media in the learning process during 4 meetings always increased with each meeting until at meeting 4 they got a maximum score of 96% with very good criteria. Increasing teacher activity has a positive impact on student learning activities which causes students to be much more active when studying. As seen in the table, student activity also increases at each meeting until it reaches the maximum percentage, namely 92% or very active at meeting 4.

The increase in students' critical thinking skills can be seen in the table above, which has increased at each meeting until they achieved classical success at meeting 4, namely 83% with very skilled criteria. The increase occurred due to the teacher's efforts to present learning activities that train students to think critically, apart from that, the teacher also always tries to present learning that is fun and interesting. By presenting problems in learning, students are trained to think critically in solving these problems, apart from that, students' cooperation skills also improve students' cooperation skills due to the process of discussion and exchanging ideas in solving problems.

The increase in students' collaboration skills can be seen in the table above showing an increase at each meeting until they achieved classical success at meeting 4, namely 92% with very skilled criteria. Improvement can occur due to the efforts of teachers who present learning in groups by presenting problems to be resolved so that there is a process of interaction between students in the form of discussions to exchange ideas in solving problems and drawing conclusions.

The improvement that occurs in each aspect shows that there is a relationship between each aspect. If the teacher's teaching activities get better, student activity will increase, and if teacher and student activity increases, student collaboration skills will also increase, as well as critical thinking skills, if there is an increase in teacher activity, student activity, and student collaboration skills. , then students' critical thinking skills will also increase. So in the end, if teacher activity, student activity, critical thinking skills and student collaboration skills increase, student learning outcomes will also increase.

The increase in every aspect shows that the teacher is able to carry out learning very well, the teacher always reflects at the end as a form of the teacher's efforts to improve so that better learning can be created at the next meeting, besides that the accuracy in choosing the learning model that the teacher uses is very important and provides big contribution to the improvements achieved.

This success also cannot be separated from the role of teachers in managing the class so as to create good relationships between teachers and students and make learning activities more active and enjoyable. In line with the opinion of Aslamiah et al (2022) explain that class management is a form of activity in organizing a class systematically in the form of preparing facilities and infrastructure and arranging seating to create a situation that is conducive to learning and provides comfort in learning so that effective and effective learning is achieved. efficient.

From the explanation above, we can conclude that the implementation of the PERMATA learning model and Wordwall media in the implementation of learning in class IV SDN Terantang 2 in the science and science subject "My Indonesia is Rich in Culture" has proven to be able to increase teacher and student activity, critical thinking skills and collaboration, as well as student learning outcomes.

Implementation of learning by implementing the PERMATA model and Wordwall media makes learning activities more focused, students are not burdened in the learning process but work together with each other with the help and direction of the teacher so that student learning activity, critical thinking skills and cooperation are achieved and have a positive impact on results. Student learning also increases. The implementation of a combination of the PERMATA learning model (Problem Based Learning, Somatic, Auditory, Visualization, and Intellectually, and Two Stay Two Stray) each has advantages and disadvantages so that they complement

each other and this PERMATA model is one of the new breakthroughs for teachers in implementing learning so that carried out very well. The following describes each learning step that has been carried out.

The first step, the teacher explains the learning objectives. This step is an important activity to carry out so that students have an understanding and can build their own knowledge through understanding the importance of studying the material being taught (Ayuni and Noorhapizah, 2023). By knowing the learning objectives, students can develop mastery of skills, train students to acquire knowledge individually and arouse the desire to learn.

The second step, the teacher presents the lesson material in outline. This step will form students' initial knowledge, provide an overview of learning activities, provoke students to be able to ask questions and process their own understanding so as to improve students' critical thinking skills. This initial step influences the next stages of the learning process so that teachers are expected to be able to increase students' learning motivation so that they can maximize their understanding of material concepts and obtain better learning outcomes (Mayasari et al., 2022; Slamet, 2022; Supriatna, 2020).

The third step, the teacher shows a learning video. Showing learning videos that contain the material or materials to be studied can improve students' ability to solve problems so that students are interested in learning (Dewi et al., 2022; Prananda et al., 2021; Suhaimi and Putri, 2019). Delivering lesson material using video media makes it easier for teachers so that it is easier for students to understand and learning becomes more enjoyable (Handayani and Noorhapizah, 2023; Pamungkas and Koeswanti, 2022; Safitri et al., 2022; Utari and Suriansyah, 2023).

The fourth step, the teacher guides the group. By dividing students into several small groups, they can improve their ability to work together in teams so that students are trained to convey information in discussions to solve problems and provide solutions or alternative solutions to problems (Aslamiah and Agusta, 2015; Ayun et al., 2023; Qur'aini and Agusta, 2023; Ummah, 2021)

The fifth step, the teacher presents the problem using wordwall media. The use of technology-based learning media with a game system makes learning more interactive and can increase activity, collaboration skills and critical thinking. Rihlasyita and Rahmawati (2022) argue that learning activities will be able to significantly increase students' desire and enthusiasm for learning if they are packaged in the form of games. Through games, learning will become more enjoyable, so that students can understand the subject matter more easily.

The sixth step, the teacher guides problem solving. Presenting problems in learning activities can train students to improve critical thinking skills and student cooperation by discussing providing solutions and resolving problems. This agrees with several researchers who concluded that presenting problems in learning activities can improve students' high-level thinking power (Hingnasari, 2023; Maret and Syarifuddin, 2021).

The seventh step, the teacher observes and guides group activities. Group learning activities can train students in conveying information, developing speaking and collaboration skills as well as forming the desired character (Dewi and Parmiti, 2022; Norlatifah and Pratiwi, 2023; Zairmi et al., 2019). Several researchers explained that teacher activities using cooperative learning can increase cooperation if combined with information sharing activities so that it will

have an impact on students' life skills in the future (Rukmana et al., 2018; Rusdi, 2021; Soilo, 2022).

The eighth step, the teacher asks students to explain the results of the visit to their home group. With students actively discussing and providing responses and opinions, they can train students' self-confidence to speak, develop speaking skills and improve students' critical thinking and collaboration skills, thus making learning much more active and interactive and fostering character education to respect each other (Anjarwati et al. 2022; Lefheye and Suriansyah, 2023;

The ninth step, random group presentation determined by the teacher. This activity will familiarize students with communicating so that students are not afraid to speak in front. The advantage of this step is that it is able to foster an attitude of cooperation in students, train speaking skills and self-confidence, as well as a sense of mutual respect for other people's opinions. Apart from that, students' critical thinking skills also develop because they are required to apply critical thinking in compiling and presenting their arguments (Ariyani & Kristin, 2021; Lestari, 2020; Permana & Kasriman, 2022;

In the tenth step, the teacher draws conclusions about the lesson material. With this step, students can restructure their understanding regarding the material they have studied (August and Ramlah, 2021; Noor and Ranti, 2019; Radiusman, 2020). Apart from that, this activity also finds out how far students understand the lesson material and makes learning activities more meaningful by involving students.

Eleventh step, the teacher provides an evaluation. This step aims to be a benchmark for teachers in identifying students' level of ability to understand and master the subject matter. According to several researchers, providing evaluations at the HOTS level can improve high-level thinking skills to measure student understanding, teach students to think systematically, increase self-confidence, and improve critical thinking skills (Fauziah and Suriansyah, 2020; Phafiandita et al., 2022; Suriansyah et al., 2019).

The twelfth step, the teacher provides reflection and follow-up. In this step, the teacher explores students' learning experiences so that the teacher can reflect on the learning activities that have been carried out to correct any shortcomings and prepare more enjoyable learning activities for the next time. This agrees with a number of research results which conclude that teachers must be good at designing fun learning so that it is meaningful for students by connecting lesson material with students' experiences, so that students can easily understand learning (Dwi and Darwis, 2022; Rukmana et al., 2018; Sulastri, 2021; Uswatunisa et al., 2020).

Based on the explanation above which has been supported by several theories by experts, the teacher's success in carrying out learning activities using the PERMATA model is supported by the use of interesting learning media, namely wordwall. According to Pradani (2022); Sari and Yarza (2021). Wordwall is defined as an application that is useful as a medium for learning, a learning resource, and a tool that teachers can use for assessment. One of the similarities between wordwall and other network-based learning media is that there are games to answer questions, making learning more interactive by attracting students to learn and focus. Apart from that, teachers can see and compare the difficulty of each question, and each student can find out their score and ranking, starting from first place to last place.

Increased teacher activity certainly has a positive impact on student learning activities which also increase due to the implementation of learning activities that accustom students to actively learn by implementing the PERMATA model and wordwall media so that student learning activities increase and can be described as follows.

The first aspect is the activity of observing and providing conclusions from video displays. In learning, the use of videos

can help teachers to explain material more easily and make the learning atmosphere more interesting (Hefny and Rini, 2023; Pamungkas and Koeswanti, 2022; Safitri et al., 2022; Wahyuningsih, 2022). Apart from that, the use of video media can help students more easily understand the lesson material.

The second aspect, students play wordwall media. Learning activities packaged with games can significantly increase students' desire and enthusiasm for learning. Through games, students will enjoy learning more so that students are helped to understand lesson material more easily (Akbar and Hadi, 2023; Sukma and Handayani, 2022; Luh et al., 2024).

The third aspect, students identify problems and provide solutions. Learning activities by presenting problems train students to improve their ability to think at a higher level to be able to identify and provide solutions. Apart from that, this aspect is also able to improve cooperation skills because students carry out discussions to solve problems. This agrees with several researchers who concluded that presenting problems in learning activities can improve students' high-level thinking abilities (Kotto et al., 2022; Putri et al., 2023)

The fourth aspect, students fill out the LKK collaboratively. This activity is effective in improving cooperation skills and the character of respecting differences due to interaction in the form of mutual communication in exchanging opinions during discussions. This agrees with (Djollong and Akbar, 2019; Widayati, 2019) who concluded that the teacher's role is to facilitate the communication process between students in class, and between students with various learning activities.

The fifth aspect, students present the results of group collaboration to other groups. This activity will create very active learning because all students have their own roles and train students' abilities to convey information and communication skills, apart from that, this activity also familiarizes students with being responsible for the distribution of tasks that have been divided. In line with several research findings which show that teacher activities using cooperative learning can increase cooperation if combined with information sharing activities so that it will have an impact on students' life skills in the future (Agusta and Noorhapizah, 2018; Ramadani and Rahman, 2024; Metroyadi et al., 2019 ; Rusdi, 2021).

The sixth aspect, presenting the results of group work in front of the class. This activity will train students' ability to convey information to others as well as develop communication skills and train students' self-confidence to appear in public. Apart from that, presentation activities also make learning more varied and more active. This agrees with Khairunnida et al (2023); Noor (2021) states that presentation activities compared to conventional methods (lectures) can increase student learning activities more actively.

The seventh aspect is providing questions and responses to the presentation group. in line with the opinion of Arlinda et al (2019); Lapase (2021) states that the use of cooperative learning gives all student groups the opportunity to express their ideas regarding the various points presented, so that all students actively participate in learning. Through this step, students will train their critical thinking skills.

The eighth aspect, students draw conclusions about the lesson material. In line with the opinion of Sayekti and Handayani (2022) that teachers who invite students to summarize learning material can be the basis for teachers to identify students' abilities to understand the material during the learning process. This is strengthened by the opinion of researchers who state that teachers inviting students to summarize lesson material can make students more active in learning activities (Rulita and Susilawaty, 2024).

The ninth aspect, students complete evaluation questions. This aspect aims to measure students' understanding of the learning material at each meeting. Agree with Magdalena et al (2021) that a good evaluation system can show the quality of learning so that teachers are helped to design learning strategies. For students themselves, a good evaluation system will increase enthusiasm and optimize all abilities and will improve

students' critical thinking abilities (Luh et al., 2024; Putri et al., 2023).

The implementation of learning activities by implementing the PERMATA model and Wordwall Media was successful in achieving an increase in teacher activity and student activity, of course this had a positive effect on students' critical thinking skills which also increased. It can be seen in the graph presented that students' critical thinking skills increase with each meeting and can be described as follows.

The first aspect, provides a simple explanation. According to several opinions, there are many indicators of critical thinking skills, one of which is the ability to ask questions on a topic (Masrinah et al., 2019; Rizaliannor and Agusta, 2023). This will be a trigger or first step in a student's critical thinking process so that they find out more information about the topic being discussed and also by being able to ask questions they can deepen students' understanding of the topic. Research by Cahyani et al (2021) states that the indicators in critical thinking are wrong. one is the ability to ask questions. It is important to hone and develop the ability to ask questions because by asking questions, a person's desire to know something can be achieved and can broaden their insight (Noorhapizah et al., 2021).

The second aspect, namely building basic skills. One indicator in building basic skills is observing information from various sources. According to Widayanti (2020), students who have high levels of thinking will collect and organize information from several sources. This will indirectly make students consider every piece of information they get, whether it is correct and also relevant to the discussion topic which is assisted by the teacher by providing varied learning resources, guiding students, responding to information and asking questions. Of course, collecting this information requires exchanging ideas and information for each student so that they can improve critical thinking skills (Achmad et al., 2018; Pratiwi et al., 2022; Yulianti et al., 2022).

The third aspect of the student concludes. Inferring is the ability to draw conclusions from the information obtained by students. According to Lodan et al (2022) in critical thinking skills, the concluding process involves analysis of the information obtained.

The fourth aspect, namely making further explanations. At this stage students will communicate the findings that have been obtained from the data collection process by means of discussion, in this way students will identify any opinions from other students and students can develop further explanations. The data obtained must be analyzed by students so that it is relevant and appropriate to the facts for testing hypotheses. In line with research by Santoso (2022) which concluded that with critical thinking skills a person will prove a hypothesis with data or information that is in accordance with the facts (Putri et al., 2023; Rizaliannor and Agusta, 2023).

The fifth aspect is organizing strategy and tactics. Indicators in this aspect are the process of formulating problems, organizing problem solving strategies, formulating alternative problem solutions, and finding the right solution by interacting with other people. Research by Azizah et al (2022) states that critical thinking is a person's skill in finding, analyzing and evaluating problems to find solutions.

Apart from increasing students' critical thinking skills, the implementation of the PERMATA model and wordwall media also has a positive impact on students' collaboration skills which also increase. This is shown in the graph presented, it can be seen that students' collaboration skills increase with each meeting and can be described as follows.

The first aspect is being responsible for determining the group. Group activities with students divided into small groups can train students to care for each other within their group. This agrees with several researchers who concluded that responsibility and cooperation between students can be formed by dividing students into small groups (Aslamiah and Agusta, 2015; Ummah, 2021).

The second aspect is respecting the existence of other students in the group. Learning activities using a group system train students to respect the existence of other students in their group so that they train

students' self-respecting character. The opinion of Putri and Arifin (2022) states that students can work together and interact socially with each other through group learning, apart from that students can also develop respect and respect for their peers. In collaboration, students will be able to convey opinions, input and suggestions by communicating. With communication, students can seek and find as much knowledge as possible, and verbally or in writing, students are able to convey this information well. Good collaboration in learning makes learning more effective (Ayuni and Noorhapizah, 2023; Mubarak, 2022).

The third aspect, contribute by contributing ideas, suggestions and solutions. Presenting problems in learning activities can help students improve students' higher thinking abilities and student cooperation in solving problems due to social interaction with communication in discussions and exchanging opinions to formulate and resolve problems (Agustina and Amberansyah, 2023; Rizkia et al., 2021) .

The fourth aspect, communicate openly and participatively. Discussion activities in group learning train students to have the courage to express their opinions, train students to communicate well and respect the opinions of their friends. Several opinions from researchers conclude that students will get used to speaking and have self-confidence by conveying the results of discussions in front of their friends (Anjarwati et al., 2022; Putri et al., 2023).

The fifth aspect, care and full responsibility for the division of tasks. Group learning activities train students' responsibility for the distribution of tasks that have been determined so that students are trained to focus on carrying out the tasks that are their responsibility. This is relevant to research conducted by Usiono et al (2024) which concluded that distributing tasks equally and fairly within a group based on the skills or abilities of each individual by utilizing the skills and strengths of group members can increase group productivity.

Students' increased critical thinking and collaboration skills as a result of better learning activities carried out by teachers certainly have a good influence on student learning outcomes which also improve. This shows that each element is in line and has an attachment that influences each other.

The effectiveness of using a combination of learning models in increasing teacher activity, student learning activity, thinking and collaboration skills, as well as student learning outcomes has been proven and supported by many previous studies, such as research by Ayuni and Noorhapizah (2023) which concluded that the use of the PBL model able to increase learning activities, critical thinking skills and collaboration and have a positive impact on student learning outcomes due to the characteristics of the model which requires students to dig up information, discuss and exchange opinions in solving problems and drawing conclusions.

The use of the SAVI model also contributes to improving learning activities, critical thinking skills and collaboration as well as student learning outcomes. This is because the characteristics of the savi model require students to be active in using all their senses starting from sight, hearing, movement and their initial knowledge, thus making students play a very active role in the systematic learning process. Research by experts concludes that using the SAVI model in learning makes the learning process much more enjoyable and of course meaningful.

Meaningful learning of course comes from fun learning, the two stay two stray model is a learning model that provides a fun learning process. Research by experts concludes that the characteristics of the TS-TS model are able to make learning activities very active and directed, students do not just sit and pay attention to the teacher but move actively in exchanging information guided and facilitated by the teacher, thereby increasing learning activities, and critical thinking and collaboration skills. until finally it has a good influence on student learning outcomes which experience improvement.

CONCLUSION

From the explanation above, it can be concluded that the implementation of the

PERMATA model and Wordwall Media in science content in class IV SDN Terantang 2 has proven effective in increasing student learning activities, critical thinking and collaboration skills, as well as student learning outcomes.

This research can be recommended to school principals and teachers as an effort to improve the quality of learning in the classroom by implementing a combination of learning models so that learning is created and carried out in a fun and meaningful atmosphere for students. Apart from that, the results of this research can also be used as study material for researchers who develop their research related to learning models.

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