



## Improvement in Student Collaboration and Learning Outcomes Using Problem-Based Learning Model

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### **Abstract**

Action research was conducted at SMP Negeri 3 Kabanjahe to evaluate the influence of Problem-Based Learning with audiovisual media on students' learning outcomes and teamwork in Grade VII Phase D. The study involved 12 participants, consisting of 6 females and 6 males, selected via census from the entire Grade VII Phase D students. The research encompassed planning, implementation, observation, and reflection stages, involving data analysis from various sources, data categorization, and presentation using tables and diagrams. The results of the research indicated a significant improvement in several aspects. Learning outcomes and teamwork increased from 53.3% to 70%, while communication for achieving common goals rose from 55% to 73.3%. Positive interdependence increased from 61.6% to 76.6%, and social coordination rose from 60% to 81.6%. Awareness of the social environment and social perceptions also experienced significant improvement. The target achievement levels for students' learning outcomes showed notable increases, with proficiency rising from 33.33% to 91% (an increase of 57.67%), fluency increasing from 6.66% to 8.33% (an increase of 1.67%), and suitability remaining at 0% with an increase of 0%, and starting to develop remaining at 0% with an increase of 0%. Recommendations include focusing on developing student teamwork and communication, providing intensive support, and conducting regular program evaluations to ensure effectiveness.

**Keywords:** *Cooperation; Learning Outcomes; Problem-Based Learning Model; Students*

### **Introduction**

The Programme for International Student Assessment (PISA), launched by OECD member countries in 2000, aims to prepare individuals with skills relevant to the international market. (Pratiwi, 2019). PISA evaluates literacy in three aspects: reading, mathematics, and science. The PISA assessment results, released every three years, have a significant impact on participating countries, indicating whether their education systems meet global standards or international market needs. Countries with good results are seen as examples of the best education globally, while those ranked low are considered in need of improvement to meet international education standards (Hewi & Shaleh, 2020).

Aside from global concerns, the education situation in Indonesia recently has raised deep concerns regarding the low quality of education caused by various issues such as educational management

problems, disparities in facilities between regions, insufficient government support, traditional mindsets, low teacher quality, and weak evaluation standards (Purwanto, 2021). To improve the quality of education in Indonesia, the government has taken specific steps through the Curriculum Development Policy known as the Merdeka Belajar Curriculum, which aims to enhance learning by considering the talents and interests of individuals (Ermina Waruwu, 2019). The Merdeka Curriculum also refers to the Pancasila Student Profile to shape students' character and explore their potential (Andari, 2022). The Pancasila Student Profile describes students who are faithful, independent, cooperative, respectful of differences, critical thinkers, and creative (Cahyaningrum & Diana, 2023). Efforts ini merupakan inovasi dalam memperkuat pendidikan karakter di Indonesia (Safitri et al., 2022).

One component of the Pancasila Student program in the Merdeka Curriculum is the practice of Gotong Royong. Gotong Royong means working together as a team where people collaborate to complete tasks more efficiently, quickly, and effortlessly (Safitri et al., 2022). The concept of Gotong Royong reflects values such as democracy, unity, openness, togetherness, and community participation. The implementation of the value of Gotong Royong in the Merdeka Belajar Curriculum and the Pancasila Student Profile Strengthening Project (P5) at SMP Negeri 3 Kabanjahe. Gotong Royong is considered important because it teaches cooperation, caring for others, and sharing as keys to success in learning (Safitri et al., 2022). Through the practice of Gotong Royong, students develop attitudes, work methods, and habits that demonstrate care, cooperation, and support for each other without belittling one another. Togetherness is considered a strategy applied in daily life, and through various activities (Satoleuru et al., 2023). Through P5, students are encouraged to work together, collaborate, care, and share, reflecting the value of Gotong Royong (Satoleuru et al., 2023). Furthermore, the implementation of the Merdeka Curriculum at SMP Negeri 3 Kabanjahe also faces challenges in students' academic achievement, such as students' inability to understand important concepts in learning (Putra & Hefni, 2022).

Merdeka Belajar is an initiative by the Indonesian Ministry of Education and Culture that emphasizes the freedom of thought for educators and the need to transfer this concept to students. As part of this initiative, the Merdeka Curriculum offers optimal intracurricular learning variations to deepen concepts and strengthen students' competencies by giving educators the freedom to choose teaching aids. The Merdeka Belajar Curriculum prioritizes learning within diverse school environments, allowing learning content to be optimized with sufficient time to understand concepts and competencies that align with students' needs and interests (Lumbanbatu et al., 2024). The Pancasila Student Profile Strengthening Project, while not having specific objectives, emphasizes the development of interpersonal skills, character, and a deep understanding of basic competencies. All of this aims to align learning with students' abilities and local needs (Widyaningrum & Suparni, 2023).

The principle of Merdeka Belajar liberates teachers from administrative tasks, allowing them to focus on learning strategies that optimize students' potential. The implementation of Merdeka Belajar has the potential to create an outstanding generation in Indonesia (Desi Wijayanti, Suyanto, 2023). The Merdeka Curriculum provides students with the opportunity to learn in a calm, relaxed, enjoyable, and pressure-free environment, with a focus on freedom of creative thinking. This approach aligns with the vision of the School as a Driver program to produce lifelong learners. Merdeka Belajar aims to restore the essence of educational law by granting schools the freedom to interpret the curriculum and assess students according to their own assessments. The main challenge is to involve teachers in curriculum development and change their paradigms to move out of their comfort zones. Assessment in the Merdeka Curriculum is comprehensive without burdening students with minimum score requirements (Rensi, 2022).

The Pancasila Student Profile Strengthening Project proposed by Ki Hajar Dewantara is a type of learning that integrates observation with solution-oriented thinking towards its surrounding issues. The purpose of this project is to strengthen various skills within the Pancasila Student Profile by providing students with opportunities to experience knowledge as part of character formation processes. In the context of the Merdeka Curriculum, this project is implemented as a new extracurricular activity in

schools, based on a philosophy that emphasizes students' interaction with real-life situations and their surroundings. Furthermore, the implementation of the Pancasila Student Profile Strengthening Project in the Merdeka Curriculum emphasizes flexibility in content, activities, and project execution time (Sam & others, 2023). The goal is to provide students with enjoyable, interactive, and directly engaging learning experiences with their surroundings, making it relevant to their lives. This project is also connected with the Pancasila Student Profile and the strengthening of students' character, as described by (Putri & Arsanti, 2022).

The elements of collaboration integral to the Merdeka Curriculum include collaboration, care, and sharing (Sari et al., 2023). Collaboration refers to students' ability to work together with others while emphasizing joy and positive attitudes, as well as the ability to communicate effectively. Additionally, care for the physical and social environment is also emphasized, including students' ability to respond to environmental conditions to create better conditions. Lastly, the ability to share is also a focus, where students are given the opportunity to give and receive valuable things for personal and collective life, as well as living together by utilizing resources in a healthy manner.

Learning outcomes refer to the abilities acquired after completing the learning process, which include changes in behavior, knowledge, experience, attitudes, and student skills (Ahmadiyanto, 2016). Personal interest, learning motivation, and reading habits are some factors that can influence students' learning outcomes (Lestari et al., 2021). Teachers play a vital role in the education process as they contribute to the development of human potential as the generation that will build the nation's future (Lumbanbatu & Sihotang, 2022). Teachers who fail to create enjoyable learning experiences can have a negative impact on students' grades (ErminaWaruwu, 2019). The implementation of effective teaching models by teachers can increase the likelihood of improved student learning outcomes. Therefore, it is important for teachers to implement innovative and engaging teaching methods for students. Learning outcomes assessment aims to demonstrate students' understanding of a competence and serves as an achievement evaluation and diagnostic tool (Supriyadi, 2020). The learning process involves UNESCO's four main pillars: learning to know, do, be, and live together. National education ideas, as explained by Riyan Yulianto (2020), categorize types of education into three aspects: knowledge (cognitive), attitudes (affective), and skills (psychomotor) (Nurtanto & Sofyan, n.d.).

Education, as a process involving social interaction and comprehensive individual development, should pay attention to students' potential in all aspects of life, including cognitive, affective, and psychomotor skills (Yulianto, 2021).

Problem-Based Learning (PBL) emphasizes the role of students in solving real-world problems to develop their understanding and skills. Problem-Based Learning (PBL) enhances student learning outcomes by focusing on problem-solving, activating student engagement, and stimulating creative thinking in everyday problem-solving. PBL also helps students understand new concepts in various fields of study (Pamuji & Wiyani, 2022).

To address these challenges, it is important to implement creative learning methods, such as Problem-Based Learning (PBL) (Jannah, 2020). This method provides students with the opportunity to learn through solving real-world problems, enhancing their engagement in the learning process. Additionally, the use of audiovisual media can also enhance the effectiveness of engaging learning and help students learn in a style that suits their preferences (Dian et al., 2021). Integrating these media provides variation in teaching, helps students understand concepts better, and improves their memory retention of the material learned. Furthermore, adjusting the material and learning approach to students' conditions is also considered crucial in enhancing learning effectiveness. By understanding individual needs and using appropriate approaches, the learning process can be more efficient and result in deeper understanding for students.

This research aims to address the following questions: 1) How does the implementation of Problem-Based Learning with the support of audiovisual media improve collaboration and student learning outcomes? 2) Is there an increase in students' collaborative attitudes through Problem-Based Learning with the support of audiovisual media? 3) Can student learning outcomes be enhanced through Problem-Based Learning with the support of audiovisual media? To achieve these research objectives, the researcher is motivated to conduct a study titled "Improving Collaboration and Student Learning Outcomes Using Problem-Based Learning Assisted by Audiovisual Media in Catholic Religious Education in Phase D of Grade VII at SMP Negeri 3 Kabanjahe."

### ***Research Methods***

This study is an action research conducted at SMP Negeri 3 Kabanjahe in Phase D of Grade VII during the first semester of the academic year 2023/2024. The research subjects consist of 12 students, comprising 6 females and 6 males, selected comprehensively from the entire Grade VII Phase D students. The objective of this research is to enhance the practice of Gotong Royong and student learning outcomes through the implementation of Problem-Based Learning model.

This research method adopts the four-step model of action research: planning, implementation, observation, and reflection as described by Hamdani (2008). Data collection is done through various methods such as questionnaires, tests, interviews, observations, and other techniques.

The process of qualitative descriptive analysis involves steps such as comparing data from various sources, categorizing data into groups, presenting data in tables and diagrams, and drawing conclusions inductively. In the context of action research, success criteria are divided into process and product success criteria. This is crucial for measuring the effectiveness of learning that occurs during the action research process.

### ***Results and Discussion***

The results of Cycle I Action Research can be summarized as follows: the implementation of the Problem-Based Learning model showed that all students (100%) succeeded in recognizing, understanding, and solving problems very well. The majority of students (85%) also excelled in organizing study groups, demonstrating good time management and responsibility. However, the evaluation showed variations in the ability to guide investigations, where some students (55%) excelled in this aspect. Most students (70%) excelled in developing and presenting task results with high quality and in an engaging manner. In analyzing and solving problems, the majority of students (85%) excelled in critical thinking and formulating solutions. However, a small number of students still need improvement, especially in organizing study groups and guiding investigations. This evaluation can serve as a basis for strengthening the areas that need improvement for students.

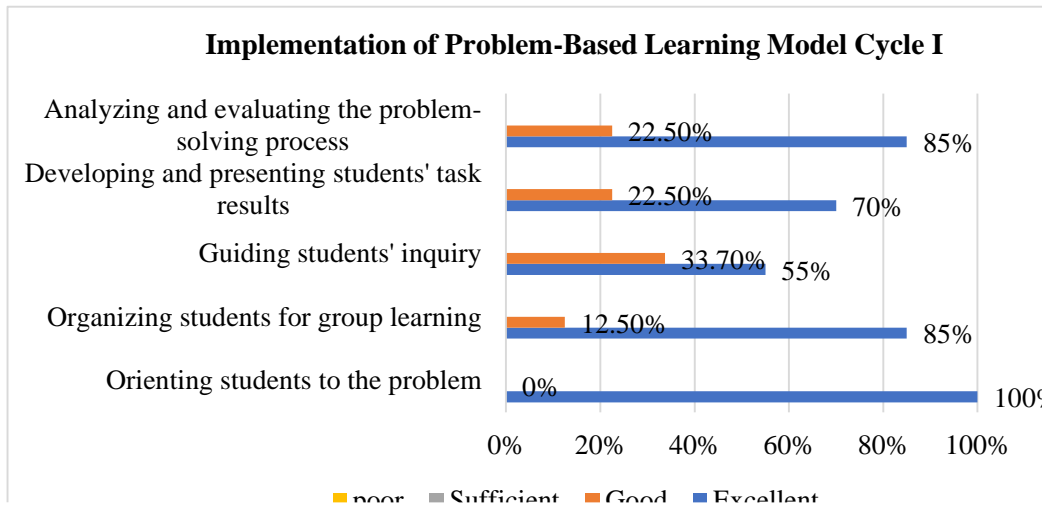


Figure 1: Problem-Based Learning Model Implementation Graph Cycle I

Based on the chart below, it can be seen that Collaboration among Phase D Grade VII students at SMP Negeri 3 Kabanjahe is as follows: The evaluation results from 32 respondents show that the majority (53.3%) rated the Cooperation Aspect as Proficient, with 43.3% Adequate, and only 3.33% Insufficient. The evaluation of the Communication Aspect involving 33 respondents, the majority (55%) rated as Proficient, 43.3% Adequate, and a small percentage (1.66%) rated as Insufficient. The Positive Interdependence Aspect received a majority rating (61.6%) as Proficient, as did the Social Coordination Aspect, Responsiveness to the Social Environment, and Social Perception, which were mostly rated as Proficient or Adequate. Overall, the evaluation shows a positive view of the aspects of collaboration, communication, and social interaction that were evaluated.

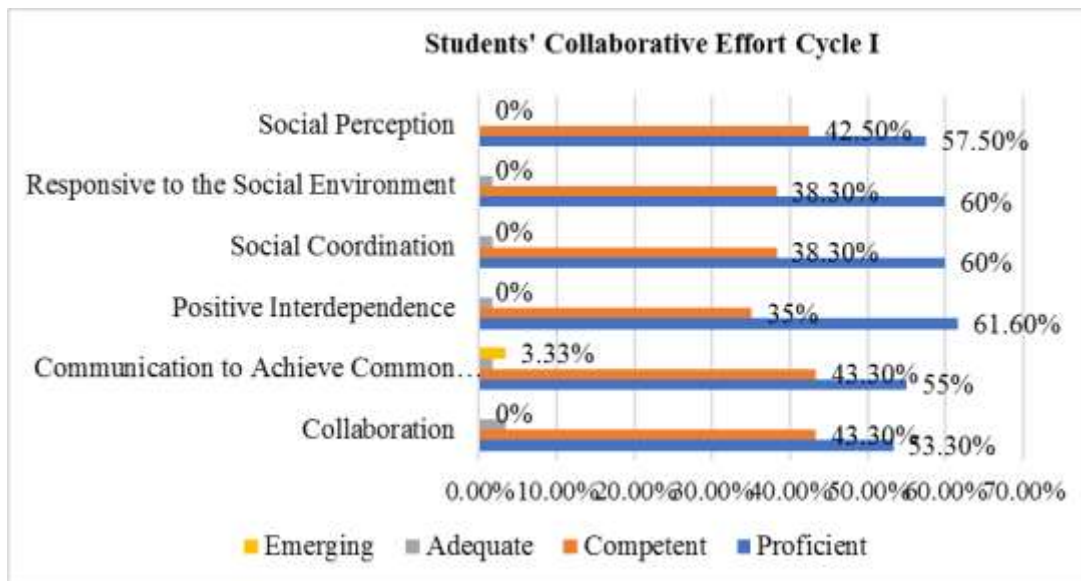
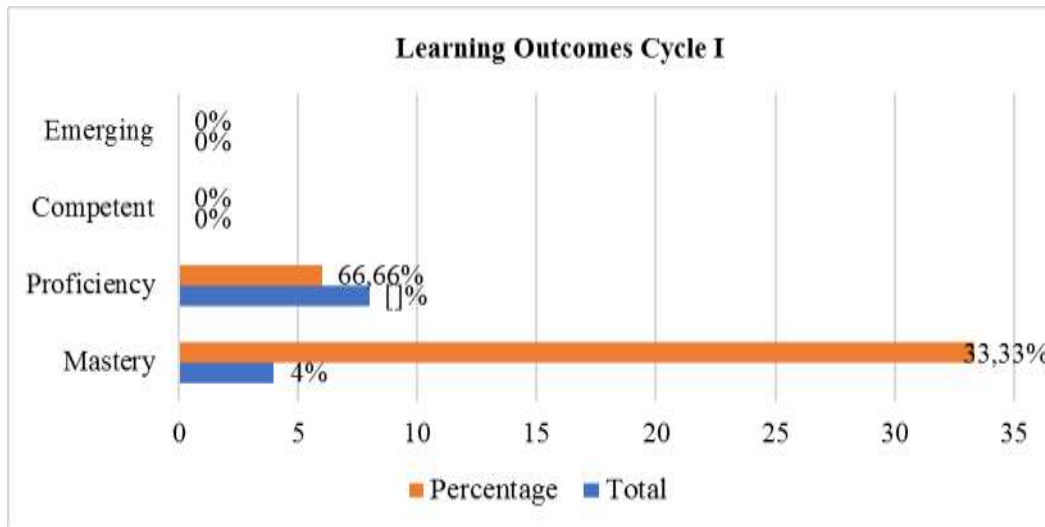


Figure 2: Collaboration of Students Graph Cycle I

Based on the image below, it can be seen that the Learning Results of Students in Phase D of Grade VII at SMP Negeri 3 Kabanjahe. The data presents the distribution of students based on their achievement levels in learning. There is a category of "Proficient" with 4 students, or 33.33% of the total evaluated students. The "Competent" category has a higher number of students, namely 8 students, reaching 66.66% of the total. However, there are no students classified in the "Adequate" or "Emerging" categories in this data, with an average learning result of 83.



I Figure 3: Student Learning Outcomes Graph Cycle I

Next, the results of action research in cycle II can be described as follows: based on the data presented, the evaluation of five learning aspects indicates that students have good to very good abilities in various evaluated learning aspects. The first aspect is students' problem orientation, where 100% of students received appropriate assessments, demonstrating excellent abilities in guiding students in actions towards given problems. The second aspect is students' organization for group learning, with 85% of students rated very good in organizational skills and 12.5% rated good, indicating students' significant ability in managing time and responsibilities when working in learning groups. The third aspect is guiding students' inquiries, where the majority of students (85%) were rated very good, reflecting their ability to guide and lead the exploration and analysis process in solving given problems. The fourth aspect is developing and presenting task results, where 80% of students were rated very good in their ability to produce high-quality work and present it clearly and informatively. The last aspect is analyzing and evaluating problem-solving processes, with the majority of students (90%) rated very good in their ability to analyze problems, develop effective actions, and assess the steps used in solving these problems.

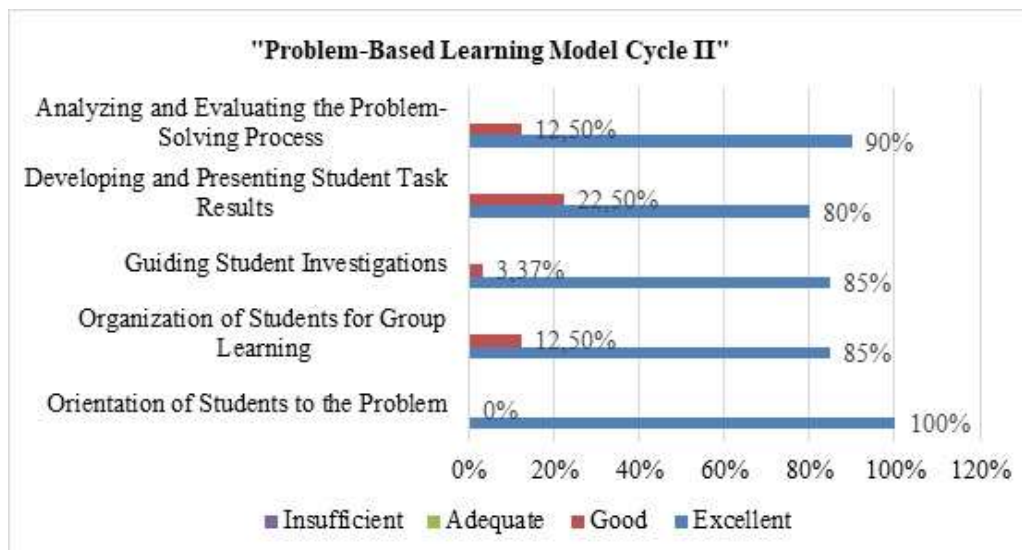


Figure 4: Problem-Based Learning Model Implementation Graph Cycle II

The evaluation results show that in terms of abilities, the aspect of Cooperation received a Proficient rating from 49 with a percentage of 70%, and Competent from 11 with a percentage of 18.3%, while the aspect of Communication to Achieve Common Goals received a Proficient rating from 44 with

a percentage of 73%, and Competent from 15 with a percentage of 25%. Furthermore, the aspect of Positive Interdependence was rated Proficient by 46 with a percentage of 76.6%, and Competent by 13 with a percentage of 21.6%, while other aspects such as Social Coordination, Responsiveness to the Social Environment, and Social Perception also demonstrate varying levels of proficiency and competence in various social interaction contexts, with the majority of ratings falling under the Proficient and Competent levels.

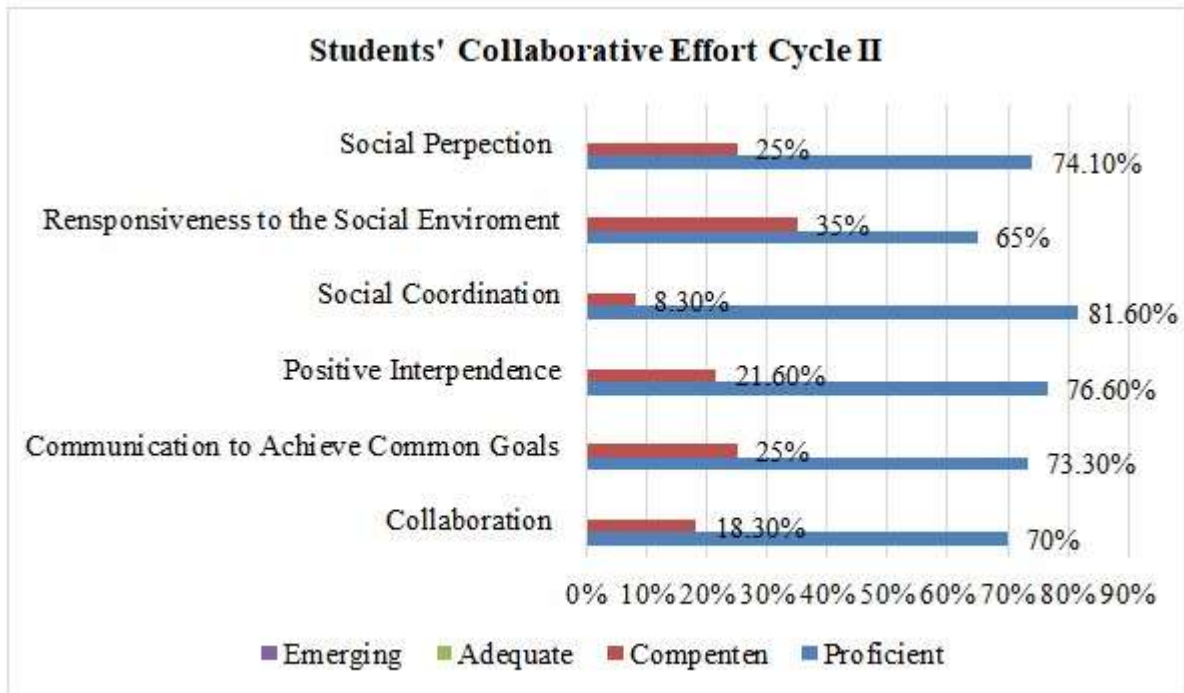


Figure 5: Participant Collaboration Graph Cycle II

The data represents the evaluation results of four different aspects. The first aspect, Proficient, has a count of 11 with a percentage of 91%. The second aspect, Competent, only has a count of 1 with a percentage of 8.33%. There are no individuals assessed in the Adequate or Emerging categories. These evaluation results depict that the majority of individuals are assessed as Proficient in the evaluated aspect, while the number of individuals assessed as Competent is lower. The Adequate or Emerging categories are not represented, indicating a high level of proficiency among the evaluated population in that aspect.



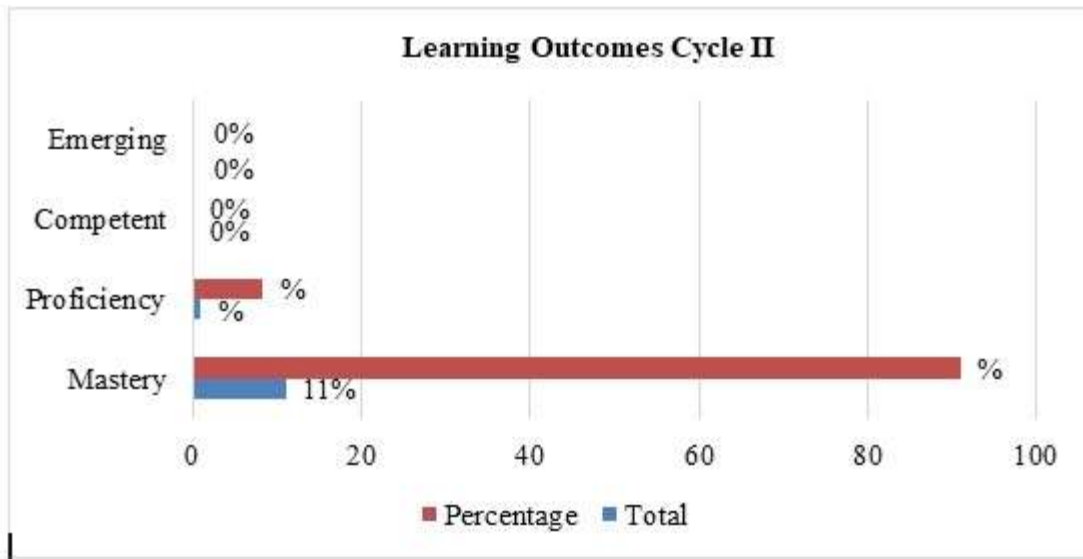


Figure 6: Students' Learning Outcome Graph Cycle II

This research aims to enhance the practice of collaboration (Gotong Royong) and students' learning outcomes using the Problem-Based Learning Model in Grade VII Phase D of SMP Negeri 3 Kabanjahe. From the data shown in the table below, there is an improvement in the successful implementation of the Problem-Based Learning Model for Grade VII Phase D students at SMP Negeri 3 Kabanjahe. In the first cycle, students' problem orientation reached 100% and remained stable at 100% in the subsequent cycles, indicating consistent improvement. The organization of students for group learning also reached 85% initially and remained stable at 85% with a 0% increase. However, there was a significant improvement in guiding students' inquiries from 55% in the first cycle, which dramatically increased to 85% in the next cycle, showing a 30% improvement. Similarly, developing and presenting students' task results, which were initially at 70%, increased to 80%, marking a 10% improvement. Lastly, the process of analyzing and evaluating problem-solving also saw an improvement from 85% to 90%, indicating a 10% increase. This indicates a positive and sustainable improvement in the implementation of the Problem-Based Learning Model in that educational environment..

Table 1: Improvement in Problem-Based Learning Model Implementation

ASPECT	AVERAGE SCORE ACQUISITION		IMPROVEMENT (From Cycle I to Cycle II)
	CYCLE I	CYCLE II	
Analyzing and evaluating the problem solving process	100%	100%	0%
Developing and presenting student's task results	85%	85%	0%
Guiding Students' Inquiry	55%	85%	30%
Organizing Students for group learning	70%	80%	10%
Orienting students to the problem	85%	90%	10%

Based on the table below, it can be seen that there has been an improvement in Collaboration among Grade VII Phase D students at SMP Negeri 3 Kabanjahe. Firstly, in the aspect of teamwork, there was an increase from 53.3% in cycle I to 70% in cycle II, indicating a 16.7% improvement. Secondly, in the aspect of communication to achieve common goals, there was an increase from 55% to 73.3%,



marking an 18.3% improvement. Thirdly, in the aspect of positive interdependence, there was an increase from 61.6% to 76.6%, showing a 15% improvement. Fourthly, in the aspect of social coordination, there was an increase from 60% to 81.6%, indicating a 16.6% improvement. Fifthly, in the aspect of responsiveness to the social environment, there was an increase from 60% to 65%, noting a 5% improvement. Lastly, in the aspect of social perception, there was an increase from 57.5% to 74.1%, showing a 16.6% improvement. The improvements in all these aspects reflect progress in students' collaboration skills in various social interaction contexts.

Table 2: Increase in Student Collaboration

ASPECT	AVERAGE SCORE ACQUISITION		IMPROVEMENT (From Cycle I to Cycle II)
	CYCLE I	CYCLE II	
Social Preception	53,3%	70%	16,7%
Responsive to the Social Environment	55%	73,3%	18,3%
Social Coordination	61,6%	76,6%	15%
Positive Interdependence	60%	81,6%	16,6%
Communication to Achieve Common Collaboration	60%	65%	5%
	57,5%	74,1%	16,6%

Based on the table below, it can be seen that there has been a significant improvement in the learning outcomes of Grade VII Phase D students at SMP Negeri 3 Kabanjahe. This improvement is observed in the proficiency category, with the percentage increasing from 33.33% in cycle I to 91% in cycle II, marking a 57.67% increase. Secondly, in the Competent category, there was an increase from 6.66% to 8.33%, showing a 1.67% improvement. Meanwhile, no students were assessed in the Adequate or Emerging categories in cycle I, and this remained stable at 0% with a 0% increase. This improvement indicates significant progress in students' learning outcomes from one cycle to the next, especially in achieving higher levels of proficiency and competence.

Table 3: Improvement in Learning Outcomes

ASPECT	PEROLEHAN SKOR RATA-RATA		IMPROVEMENT (From Cycle I to Cycle II)
	CYCLE I	CYCLE II	
Emergring	33,33%	91%	57,67%
Competent	6,66%	8,33%	1,67%
Proficiency	0 %	0%	0%
Mastery	0 %	0%	0%

The implementation of the Problem-Based Learning model in Grade VII Phase D students at SMP Negeri 3 Kabanjahe reflects interesting findings from this research. Teachers successfully guide students in problem-solving in an effective manner, through clear learning objectives, improved student understanding, and stimulation of student interest and motivation to actively engage in learning, as described in the study by (Khakim et al., 2022). Furthermore, the engaging approach in presenting problems by teachers helps enhance student interest and engagement in learning (Malla Avila, 2022). Students are also encouraged to actively participate in problem-solving, which positively impacts creativity, social skills, and conceptual understanding, as noted in the research on Effective Group Organization, facilitating positive interactions, and assigning responsibilities to each group member, as demonstrated in the study by (Sulistiawati & Prastowo, 2021), creating a collaborative and productive learning environment. Additionally, the research indicates that inquiry and experimentation activities promoted by teachers, as seen in the study by (Rahmadani, 2019), help develop students' research skills, information analysis, and problem-solving abilities. Lastly, guidance in presenting group work outcomes, evaluating skills, and strengthening student engagement in the learning process, as observed in this

research context, enriches students' learning experiences and hones their communication and evaluation skills. This not only improves students' academic achievements but also develops highly valuable skills for future success, such as critical thinking, creativity, collaboration, and communication.

The increase in collaboration among Grade VII Phase D students at SMP Negeri 3 Kabanjahe can be explained by the research findings that show an improvement in group cooperation, including responsiveness, openness, and enthusiasm (Firman et al., 2023). The willingness to complete tasks as agreed reflects commitment and responsibility (Widyaningrum & Suparni, 2023). Activities such as discussions and idea exchanges are encouraged by increased self-confidence and a supportive learning environment (Hasriyani, 2017). Acknowledging the contributions of group members fosters a mutual respect attitude. Helping classmates demonstrates empathy and a spirit of cooperation (Nurfitriani & Hidayat, 2020). Improved communication includes clearly conveying ideas and listening to opinions attentively (Hariyanto, 2021). Effective discussions are supported by communication skills and educator support (AULIA QORI ARDI, 2022). Expressing disagreement politely indicates improved communication abilities (Sunarni et al., 2017). Helping each other understand tasks shows an increase in collaboration (Firman et al., 2023). Awareness of group success and active participation by all members indicate positive development (Triguna, 2021). Equally dividing tasks shows awareness of collaboration. Increased empathy, engagement in group activities, and harmony are influenced by encouragement from the school environment (Tabi'in, 2017). Students also improve in paying attention to and respecting differences in opinions, teaching tolerance (bidin A, 2017).

## **Conclusion**

Based on the action research conducted at SMP Negeri 3 Kabanjahe, the conclusions can be summarized as follows:

1. Problem-Based Learning (PBL) model enhances learning outcomes and student cooperation in Phase D of Class VII at SMP Negeri 3 Kabanjahe: Cooperation increased from 53.3% to 70% (an increase of 16.7%), Communication to achieve common goals rose from 55% to 73.3% (an increase of 18.3%), Positive interdependence increased from 61.6% to 76.6% (an increase of 15%), Social coordination rose from 60% to 81.6% (an increase of 16.6%), Responsiveness to the social environment increased from 60% to 65% (an increase of 5%), Social perception rose from 57.5% to 74.1% (an increase of 16.6%).
2. Improvement in student collaboration in Phase D of Class VII at SMP Negeri 3 Kabanjahe: Orienting students to the problem remained at 100% (no change), Organizing students for group learning remained at 85% (no change), Guiding student investigations increased from 55% to 85% (an increase of 30%), Developing and presenting student task results increased from 70% to 80% (an increase of 10%), Analyzing and evaluating problem-solving processes increased from 85% to 90% (an increase of 10%).
3. Target achievement of student learning outcomes in Phase D of Class VII at SMP Negeri 3 Kabanjahe: Mastery increased from 33.33% to 91% (an increase of 57.67%), Proficiency increased from 6.66% to 8.33% (an increase of 1.67%), Adequate remained at 0% (no change), Beginning to develop remained at 0% (no change).

## **Recommendations**

Recommendations based on the study "Enhancing Cooperation and Learning Outcomes Using Problem-Based Learning Model at SMP Negeri 3 Kabanjahe" are as follows: Schools need to continuously implement and enhance the application of Problem-Based Learning (PBL) model with a focus on developing students' cooperation and communication skills, as well as providing intensive support and conducting periodic program evaluations to ensure its effectiveness. Catholic Religious

Education teachers are advised to integrate religious values into PBL by paying special attention to strengthening communal work skills, social ethics, and providing spiritual support and personal guidance through parental involvement and church community engagement. For students, it is important to continuously enhance communal work skills, positive dependency, social awareness, independence, and creativity in learning. Subsequent researchers are recommended to broaden the scope of research, consider social and cultural contexts, conduct longitudinal studies, and promote collaboration and development of relevant alternative learning models. Lastly, educational institutions such as STP St. Bonaventura KAM need to implement PBL, enhance problem-solving skills, creativity development, periodic evaluation, and develop curricula in line with research findings.

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