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Integrating Teaching at the Right Level with Problem-Based Learning to Enhance Mathematics Learning Outcomes

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ABSTRACT

This study aims to enhance students' mathematics learning outcomes at SMAN 3 Mataram by implementing the Teaching at the Right Level (TaRL) approach integrated with the Problem-Based Learning (PBL) model. Conducted as classroom action research, the study spans three cycles, each comprising four stages: planning, implementation, observation, and reflection. The subjects were 35 students from class X-1 at SMAN 3 Mataram during the second semester of the 2023/2024 academic year. Research instruments included observation sheets for lesson design implementation, written tests, and student reflection questionnaires. Results indicate that integrating TaRL with PBL significantly improved mathematics learning outcomes. In Cycle I, the average score was 77.60, with a classical mastery of 68.57%, marking a 7.11% increase from the pre-cycle. Cycle II saw the average score rise to 86.91 with a classical mastery of 85.71%, a 9.31% improvement from Cycle I. By Cycle III, the average score reached 91.00 with a classical mastery of 100%, reflecting a 4.09% increase from Cycle II. These findings conclude that the TaRL approach integrated with the PBL model significantly enhances the mathematics learning outcomes of class X-1 students at SMAN 3 Mataram in the second semester of the 2023/2024 academic year.
Keywords: TaRL, PBL, Mathematics Learning Outcomes.

ABSTRAK

Penelitian ini bertujuan untuk meningkatkan hasil belajar matematika siswa di SMAN 3 Mataram dengan menerapkan pendekatan Teaching at the Right Level (TaRL) yang diintegrasikan dengan model Problem Based Learning (PBL). Penelitian ini dilakukan sebagai penelitian tindakan kelas dan berlangsung selama tiga siklus, yang masing-masing siklus terdiri dari empat tahap: perencanaan, pelaksanaan, observasi, dan refleksi. Subjek penelitian adalah 35 siswa kelas X-1 SMAN 3 Mataram pada semester II tahun ajaran 2023/2024. Instrumen penelitian meliputi lembar observasi penerapan desain pembelajaran, tes tertulis, dan angket refleksi siswa. Hasil penelitian menunjukkan bahwa integrasi TaRL dengan PBL secara signifikan meningkatkan hasil belajar matematika. Pada Siklus I, skor rata-rata adalah 77,60, dengan ketuntasan klasikal 68,57%, menandai peningkatan sebesar 7,11% dari pra-siklus. Pada Siklus II, skor rata-rata meningkat menjadi 86,91 dengan ketuntasan klasikal 85,71%, peningkatan sebesar 9,31% dari Siklus I. Pada Siklus III, skor rata-rata mencapai 91,00 dengan ketuntasan klasikal 100%, mencerminkan peningkatan sebesar 4,09% dari Siklus II. Temuan penelitian ini menyimpulkan bahwa pendekatan TaRL yang diintegrasikan dengan model PBL secara signifikan meningkatkan hasil belajar matematika siswa kelas X-1 di SMAN 3 Mataram pada semester II tahun ajaran 2023/2024.
Kata kunci: TaRL, PBL, Hasil Belajar Matematika

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Introduction

Mathematics is one of the mandatory subjects taught to students at all levels of education in Indonesia, from elementary school, middle school, high school, to higher education. Most of the mathematics material is related to problem-solving. Mathematics not only involves studying formulas and concepts but also applying that knowledge to solve various problems in everyday life, science, and other fields. Mathematics learning can be obtained through formal and non-formal education. In the implementation of formal education, many students still consider mathematics to be a difficult subject. This is due to the students' lack of ability to understand mathematics (Lestari et al., 2024). A similar explanation is provided in Permatha (2023) that the general perception among students is that mathematics is considered a very difficult subject. Mathematics is considered frightening and disliked by students because learning it requires complex activities (Sutryani et al., 2023). Meanwhile, it is understood that mathematics as a subject aims to enhance thinking and logic skills, as well as to help students apply mathematical concepts to face real-life situations and solve various problems. Therefore, it is hoped that students will recognize the importance of knowledge and understanding of mathematical concepts. Mathematics can provide a variety of skills and attitudes necessary for individuals to lead an intelligent life in their environment (Maghfiroh, 2024). Mathematics learning aims for students to understand concepts and apply mathematical procedures in everyday life and solve mathematical problems (Fianingrum, 2023).

In the national education system, learning in schools is based on the applicable education curriculum. The learning process that refers to the curriculum is systematically designed to achieve the predetermined educational goals. The curriculum serves as a guide in ensuring that the material taught is relevant and aligned with the students' development. Teachers, as facilitators, not only convey information but also design optimal learning experiences for students. This learning process involves continuous planning, implementation, and evaluation to achieve the expected competencies. A flexible curriculum allows for adjustments to student characteristics, as well as technological developments and global needs, so that learning can integrate various approaches and strategies to achieve comprehensive educational goals.

Currently, the education system in Indonesia is implementing the Merdeka curriculum, which is designed to respond to the intense competition for human resources in the 21st century. The merdeka curriculum is the latest curriculum

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developed by the government to meet the needs of students (Lestari et al., 2024). The independent curriculum serves as a foundation for developing students' potential, where teachers are given the freedom to design learning tools. As a professional, teachers must possess the skills to develop students' potential, whether they have above-average understanding compared to their peers or those who face difficulties in learning. Therefore, the independent curriculum creates a learning environment that is easily adaptable for students (Listyaningsih et al., 2023). The independent curriculum emphasizes that learning activities are conducted with a student-centered approach and that the essence of the learning process is tailored to the needs of the students (Maghfiroh, 2024).

Based on the explanation above, it can be concluded that the objectives of implementing mathematics education within the context of the Merdeka Curriculum are closely related, where both support each other to achieve a more student-centered learning experience. In this case, mathematics learning is directed not only to teach mathematical concepts but also to develop logical and analytical thinking skills, as well as the application of these concepts in everyday life. The Merdeka Curriculum provides space for teachers to design flexible and contextual mathematics learning, tailored to the needs and interests of students, and encourages active interaction between students and the material using various supportive approaches, models, or methods. One of the approaches applied in this research that is relevant for achieving mathematics learning objectives in the context of the Merdeka Curriculum is Teaching at the Right Level (TaRL). Febriani & Shaliha (2023) explain that the Teaching at the Right Level (TaRL) approach is a learning method that focuses on the ability levels of students, rather than their grade levels. This approach distinguishes itself from conventional teaching methods, which are more focused on division based on age or grade level. TaRL can provide a solution to the problem of understanding gaps that often arise in the classroom, where students' abilities vary even though they are in the same class. Supporting this, Indartiningsih et al., (2023) also explain that Teaching at the Right Level (TaRL) is a learning approach that focuses more on the students' ability levels rather than their grade levels, with the aim of ensuring that all students receive equal learning rights and sufficient space to achieve the expected learning objectives or the competency targets and materials outlined in the learning outcomes. Teaching at the Right Level (TaRL) is a new paradigm in education as an approach that considers the characteristics and needs of students to accommodate the learning outcome gaps among students (Ainun et al., 2023). In other words, the Teaching at the Right Level (TaRL) approach is one of the differentiated learning approaches. In the Teaching at the Right Level (TaRL) approach, learning strategies are designed to accommodate the

various achievement levels of students in a single class. Learning is conducted by providing varied materials, tailored to the understanding levels of each student. This differentiation of learning aims to ensure that each student can achieve the predetermined learning objectives while also addressing the understanding gaps that often arise in the classroom (Lestari & Kuryani, 2023).

Next, Febriani & Shaliha (2023) explain several important stages for teachers to effectively implement the Teaching at the Right Level (TaRL) approach, including the need for teachers to understand students by exploring their interests, learning styles, and individual characteristics, considering that each student has unique qualities and abilities; and teachers need to design lesson plans tailored to the results of student identification and group them based on similar ability levels. Supporting this, in Asrini et al., (2024), the implementation of the TaRL approach in the classroom involves several stages, namely the teacher conducts an initial assessment (diagnostic assessment) as a step to obtain information related to the characteristics, needs, and potential of each student. This assessment is important to determine the level of ability and initial development of students, so that teachers can design more appropriate learning interventions (Anggaraena et al., 2022); teachers group students based on the results of the initial assessment analysis. With the results of the initial assessment, teachers can group students based on similar levels of ability or needs, allowing for more targeted and effective teaching; the next stage is the teaching process adjusted to these groups, with the aim of providing material that matches the students' level of understanding; in addition, the TaRL approach also emphasizes the importance of periodic evaluations to continuously monitor students' learning progress, conducted at the end of each learning cycle.

Through the evaluation results obtained, teachers can adjust the teaching strategies used to remain relevant to the development of students' abilities, making the learning process more responsive and effective. Furthermore, the evaluation results through the assessment process reflect the students' learning achievements, indicating the extent to which students have mastered the competencies taught in accordance with the established learning objectives (Arifin, 2012). Learning outcomes are the achievements of students' learning or, in other words, the changes in abilities experienced by students after participating in the learning process in the affective, cognitive, or psychomotor domains, which are assessed through a planned and systematic evaluation process (Ulumudin et al., 2019). Thus, learning outcomes reflect the individual's better development, from previously not knowing to knowing, and

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with more refined abilities compared to before. This change indicates an improvement in behavior that can be clearly observed (A'dadiyyah, 2021). In line with this, Andryannisa et al., (2023) explain that student learning outcomes refer to the level of achievement in abilities, knowledge, skills, and understanding obtained during the learning process. This reflects the extent to which students are able to meet the learning objectives set in the curriculum or educational program they are following. Learning outcomes not only encompass cognitive aspects but also the affective and psychomotor dimensions that demonstrate the overall development of students. The achievement of learning outcomes is important for assessing the effectiveness of teaching methods as well as providing an overview of students' abilities to face future challenges.

Based on the explanation, it can be concluded that mathematics learning outcomes reflect the level of ability achieved by students after undergoing the learning process in the field of mathematics, especially in logical and analytical thinking skills. This achievement also includes students' ability to apply mathematical concepts to solve problems encountered in everyday life. Thus, the results of learning mathematics not only measure theoretical understanding but also the students' readiness to face practical challenges through the application of mathematics. The results of the assessment process on students' learning outcomes often serve as the basis for evaluating the extent to which students have understood the material that has been taught. In formal education, one subject that often provides a clear picture of the gap in students' ability levels or learning outcomes is mathematics, especially in terms of knowledge and skills.

The initial observation conducted in class X-1, second semester of the 2023/2024 academic year at SMAN 3 Mataram, showed an average daily test score of 70.49 and a classical completeness rate of 57.14% with a Minimum Completeness Criteria (KKM) of 75 and a minimum classical completeness of 85%. Therefore, it can be said that the students' learning outcomes in mathematics are at a very concerning level. The low mathematics learning outcomes of the students are partly influenced by their low level of concentration or focus, as it was observed during the learning process that only a small number of students in class X-1 could focus well on the lessons, while others were more often chatting, dozing off, or even sleeping. Therefore, the low academic performance of students in mathematics needs special attention from teachers to make efforts to improve student learning outcomes and develop the teaching model used. The cause of the low student learning outcomes is the teaching model used during the learning process. Mutardlo & Aqib (2022) explain that a learning model is a conceptual

framework that describes a systematic procedure in organizing learning experiences to achieve learning objectives. Therefore, it can be said that the more appropriate the learning model used, the more optimal the students' learning outcomes will be.

Because mathematics learning emphasizes students' ability to solve problems in daily life, problem-solving can be applied in the learning process through the PBL model. This is in line with the objectives of mathematics education, where students are expected to apply their mathematical knowledge in societal contexts. Therefore, problem-solving skills in mathematics are crucial for students (Listyaningsih et al., 2023). For this reason, the Problem-Based Learning (PBL) model is considered more suitable and relevant to adopt. The problem-based learning model is a teaching approach that provides students the opportunity to explore authentic experiences, encouraging active participation in the learning process (Mauk et al., 2022). In other words, PBL is a learning model that can train students to create designs and problem solving processes so that they can build their own knowledge during the learning process through authentic experiences (Marchy et al., 2022). In line with this, Saputra (2021) describes PBL as an approach that utilizes real, unstructured, and open-ended problems as the context for students to develop problem-solving skills, stimulate critical thinking, and build new knowledge. PBL aims to train students to learn independently, using real-world situations as a context to encourage critical thinking and sharpen skills in solving everyday problems (Sofyan et al., 2017). The steps in Problem-Based Learning (PBL) include: 1) orienting students to the problem, 2) organizing students for learning, 3) guiding individual or group investigations, 4) developing and presenting results, and 5) analyzing and evaluating the problem-solving process (Sofyan et al., 2017).

Several previous studies that support this research, namely the study conducted by Mukarramah et al., (2024), obtained research results that the application of the PBL (Problem Based Learning) model together with the TaRL (Teaching at The Right Level) approach was able to improve students' mathematics learning outcomes, evidenced by the increase in the percentage of students passing the evaluation stage in each cycle and improving the quality of mathematics learning. Similar results were also obtained by Magfirah et al., (2024) that classroom action research conducted in two cycles by applying the Teaching at the Right Level (TaRL) approach significantly improved student learning outcomes, addressed gaps in student understanding, and enhanced the quality of learning. In line with this, Apriliani et al., (2024) obtained research results stating that the Teaching at the Right Level (TaRL) approach effectively improves students' mathematics learning outcomes as seen from the posttest scores which

increased from the pretest scores after applying the TaRL approach in the learning process. The study found that implementing the Problem-Based Learning model combined with the Teaching at the Right Level approach in the mathematics learning process can enhance students' numeracy literacy skills (Susanti et al., 2024). In order to improve the learning outcomes of mathematics students in class X-1 at SMAN 3 Mataram for the second semester of the 2023/2024 academic year, the researcher plans to try implementing the Teaching at the Right Level (TaRL) approach integrated with Problem-Based Learning (PBL) through three learning cycles on statistics material. The objective of this research is to analyze the improvement in students' mathematics learning outcomes through the integration of the Teaching at the Right Level (TaRL) approach and the Problem-Based Learning (PBL) model in the classroom at X-1 SMAN 3 Mataram.

Research Methods

The type of research used in this study is Classroom Action Research (CAR). CAR can be described as a type of research that presents both the process and the results comprehensively, where the researcher takes action in the classroom with the aim of improving the quality of learning (Arikunto et al., 2015). The subjects of this research are 35 students in class X-1 at SMAN 3 Mataram. The research was conducted from February to March 2024 during the second semester of the 2023/2024 academic year. The scope of this research is limited to the subject of Mathematics.

This study consists of three cycles, each applying a research design adopted from the Classroom Action Research model by Arikunto et al., (2015), which consists of four stages: planning, acting, observing, and reflecting. The research scheme for each cycle is shown as follows.

In the planning stage, the researcher identifies the issues that occur in the classroom and plans the actions to address these problems. This plan includes the objectives of the action, the steps to be taken, as well as the tools and methods to be used to collect data; In the acting stage, involves the implementation of the action plan that has been prepared. The researcher carries out the intervention or changes in the learning process as per the plan. In this case, the teacher designs the lesson plan, prepares the research instruments, creates both initial and summative assessment designs, and develops the learning scenario using the Teaching at the Right Level (TaRL) approach and the Problem-Based Learning (PBL) model; In the observing stage, during the implementation of the action, the researcher observes and records everything that happens in the classroom. This observation aims to collect relevant data regarding the effects of the action taken (evaluation). The data could include field notes, students' learning outcomes, or students' responses; then, in the reflecting stage, after the action

and observation stages are completed, the researcher reflects on the outcomes of the actions that were carried out. This reflection involves analyzing and evaluating the data that has been collected to determine the extent to which the actions were successful in achieving the objectives (Figure 1). Based on the reflection results, the researcher may decide to plan the next cycle with improvements or modifications to the actions taken.

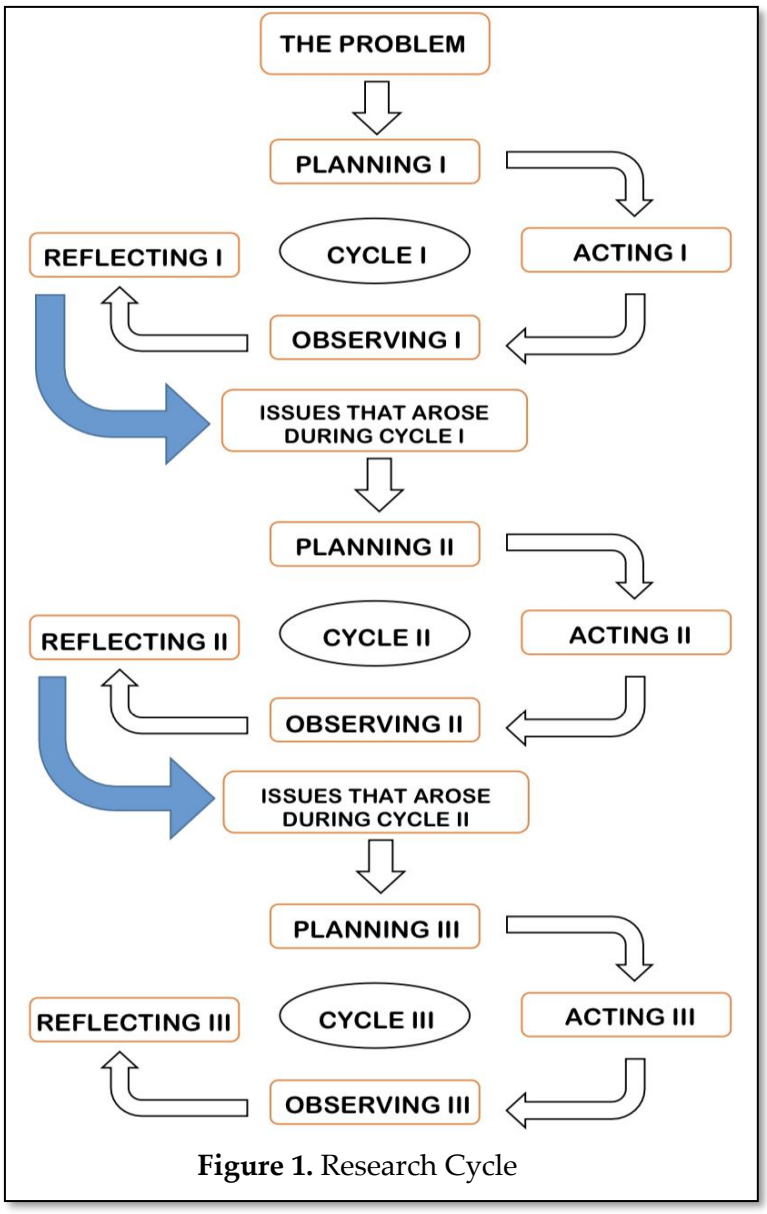

Figure 1. Research Cycle

The success indicators of the learning process are based on the students' learning outcomes. The research instruments include three types, namely observation sheets to assess the effectiveness of the learning process in each cycle according to the lesson plan designed during the planning stage; written test to measure the mathematics learning outcomes of the students. Students are considered to have completed their learning individually if their test score is ≥75, and they are considered to have

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completed it classically if the percentage of students who complete their learning in the class is ≥85% (Kustadiyono, 2023); and reflection questionnaires to gather feedback on students' responses during the learning process.

Result and Discussions

The implementation of the TaRL approach integrated with PBL model in class X-1 at SMAN 3 Mataram for the second semester of the 2023/2024 academic year, from pre-cycle, cycle I, cycle II, to cycle III, is presented in the following Table 1.

Table 1. Analysis of Learning Outcomes from Pre-Cycle to Cycle III

No	Cycle	Avarage	Classical Completion
1	Pre-Cycle	70,49	57,14%
2	Cycle I	77,60	68,57%
3	Cycle II	86,91	85,71%
4	Cycle III	91,00	100,00%

Based on the data analysis results from the pre-cycle, it is observed that the average student learning outcomes in mathematics were 70.49, while the Minimum Completion Criteria set was 75. This indicates that the student learning outcomes are still below the expected standard. Classically, the level of completion only reached 57.14%, which is far from the minimum classical completion threshold of 85%.

Upon identifying this gap, the researcher decided to conduct further research with the X-1 students at SMAN 3 Mataram for the second semester of the 2023/2024 academic year. This research aims to improve students' learning outcomes in mathematics by applying the Teaching at the Right Level (TaRL) approach integrated with the Problem-Based Learning (PBL) model, as outlined below.

Cycle I

In the implementation of Cycle I, the planning stage began with the preparation of learning materials, including Lesson Plan I, Student Worksheet I, and formative and diagnostic test questions. Additionally, preparations involved the procurement of other teaching tools to support the learning process. As an evaluation instrument, an observation sheet was prepared to monitor the implementation of the learning activities carried out by the teacher.

During the implementation stage, the TaRL approach integrated with the PBL model was applied, where the learning model syntax adopted the problem-based learning framework developed by Sofyan et al., (2017). Through this approach, the learning

process became more interactive and focused on problem-solving, providing students the opportunity to actively engage in the learning process. As a result, the implementation stage was not only a time to apply new teaching strategies but also to create a learning environment that encouraged students to develop a deep understanding of the Mathematics material at SMAN 3 Mataram.

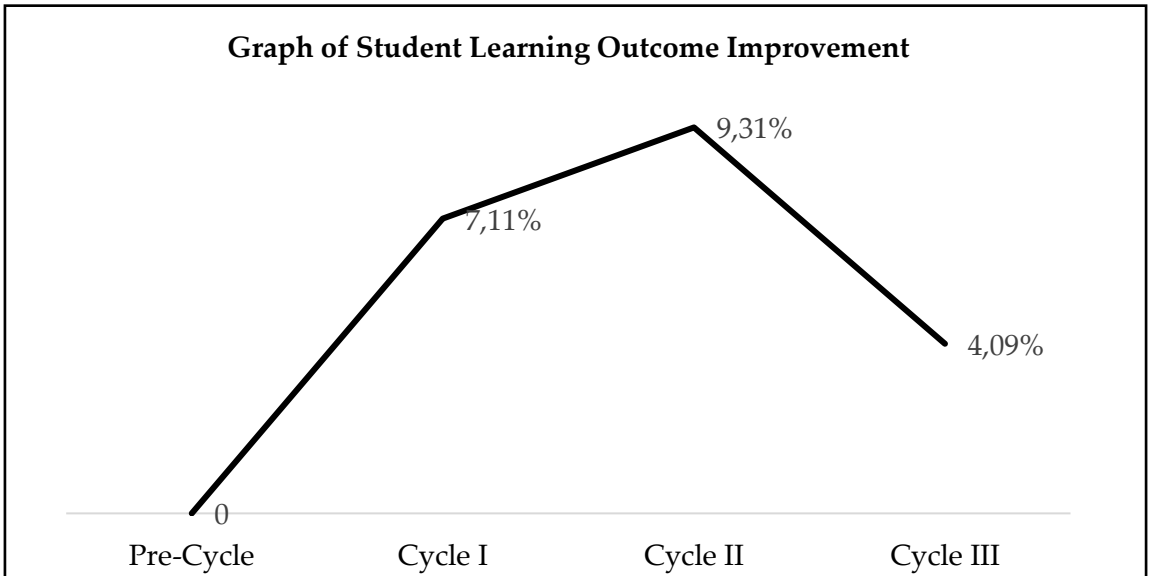

Figure 2. Graph of Student Learning Outcome Improvement

Based on the evaluation results of the learning implementation in Cycle I, it was found that 11 students in the class scored below the minimum completion criteria, which is below 75. On the other hand, only 24 students managed to score above the minimum completion criteria. Furthermore, the analysis at this stage revealed an overall average score of 77.60. From these results, it can be concluded that, in this initial stage, the overall student learning outcomes had not yet reached the expected level. Classically, only 68.57% of students achieved or exceeded the score of 75, a percentage that was far below the target completion rate of 85%. However, there was a significant improvement of 7.11% from the pre-cycle to Cycle I (Figure 2).

The reflection on the implementation of learning in cycle I shows that students' learning outcomes have not yet reached the maximum level. According to the observation's findings, this is caused by the students' adaptation to the new learning strategies, especially the TaRL approach and the PBL model, which are different from the teacher-centered learning approach they are used to. Additionally, student participation in learning is also hindered, as seen from some students who are less active, still engage in conversations with their desk mates, and easily feel drowsy, and the scope of the material is too broad, so it is not maximized according to the allocated time. This reflects that learning habits and the learning environment have a significant

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impact on students' learning outcomes, as explained by Sidabutar (2018), namely that students' learning outcomes are influenced by various factors, both internal and external. Internal factors include students' attitudes towards learning, motivation, concentration, ability to retain and retrieve acquired knowledge, achievements, self-confidence, intelligence, study habits, and aspirations. Meanwhile, external factors include the role of teachers as guides, the availability of learning infrastructure and facilities, assessment policies, the social environment, and the implemented curriculum. Of all these factors, students' study habits and learning environment are estimated to have a significant impact on the learning outcomes achieved.

To address the shortcomings faced in Cycle I, efforts need to be focused on adjusting the learning strategies to better align with the needs and characteristics of the students. One of the solutions that can be implemented is to strengthen students' adaptation to the TaRL and PBL approaches by providing a more in-depth explanation of these methods and their benefits, as well as involving students in lesson planning, designing learning with a scope of material that fits the allocated time. Additionally, it is important to enhance student motivation and participation by organizing more structured group discussions, providing challenges that match their skill levels, and paying attention to the physical and psychological comfort of the students so that they can focus better. By organizing students in discussions and using Student Worksheets (LKPD) tailored to each student's cognitive ability, students can collaborate better and be more active in learning activities (Melani et al., 2024). The use of Student Worksheets (LKPD) tailored to the cognitive levels of students can also help improve students' understanding and concentration (Mulyani et al., 2024). With a more organized and responsive approach to students' learning habits, it is expected that learning outcomes will significantly improve in the next cycle. The results obtained are supported by previous research conducted by Ainun et al., (2023) which showed an improvement in student learning outcomes from pre-cycle to cycle I after the implementation of the TaRL approach using engaging learning media, collaboration, and grouping students into small groups as applied in this study.

Cycle II

In cycle II, the learning process will continue to follow stages similar to cycle I, namely planning, implementation, observation, and reflection. However, the lesson planning will be adjusted based on the reflection results obtained from the previous cycle, with the aim of avoiding the mistakes or shortcomings that occurred previously. Cycle II is an opportunity to implement the planned changes to continuously improve the quality of learning and student learning outcomes. Some of the changes that will be implemented include organizing the material more in line with the available time allocation, providing a more in-depth explanation of the benefits and objectives of

applying the TaRL approach and the PBL model, and creating a more enjoyable classroom atmosphere through increased interaction with students, especially during the individual or group inquiry guidance stage. Additionally, students' adaptation to the approach will be strengthened by reapplying the TaRL and PBL methods to enhance learning effectiveness.

The students' learning outcomes in Cycle II indicate significant improvement, with the number of students achieving or exceeding the Minimum Completion Criteria rising to 30, up from Cycle I. Meanwhile, 5 other students still scored below the minimum completion criteria. The average learning score for the entire class reached 86.91, with a classical completion percentage of 85.71%. This result shows an improvement in learning outcomes from Cycle I to II, surpassing the target of classical completion. Additionally, there was a significant increase of 9.31% from Cycle I to Cycle II.

Factors that are believed to contribute to the improvement of student learning outcomes in the cycle II include better student readiness, triggered by clearer explanations from the teacher regarding the goals and benefits of implementing the TaRL approach and the PBL model. In addition, more thorough preparation in the learning process, more accurate mapping of materials with appropriate time allocation, and students' increasingly better adaptation to the applied learning approach also play an important role in this improvement. The success of teachers in fully implementing all aspects of the TaRL approach and the PBL model, as well as creating a comfortable and conducive classroom atmosphere, further supports the achievement of more effective learning objectives. The consistent use of PowerPoint slides in presenting material, as well as LKPD tailored to the needs of students, also strengthens the learning process. Added to the targeted assessment and evaluation process, these factors significantly contribute to the improvement of student learning outcomes, better than in the previous cycle. The findings of this cycle's evaluation and reflection are in line with research by Asrini et al., (2024) that found that the use of learning media (PowerPoint and students' worksheets) consistently and the improvement of Students' Worksheets (LKPD) quality based on students' needs are two of the factors that contribute to the improvement in students' mathematics learning outcomes through the implementation of TaRL. Additionally, the improvement of students' learning outcomes from cycle I to cycle II has been attributed to teachers' ability to successfully apply every aspect of the strategy, including monitoring learning progress and providing guidance according to students' abilities.

Cycle III

In Cycle III, the learning process will continue to follow the same four stages as in Cycles I and II, namely planning, implementation, and evaluation. The learning

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activities will refer to the lesson plan revised based on the findings from the previous cycle. By considering the reflection results from Cycle II, corrective actions and revisions to the lesson plan will be implemented during the planning stage. This aims to prevent the recurrence of mistakes or shortcomings that may have been encountered in the previous cycle. Cycle III is seen as an opportunity to implement the changes that were previously planned, to improve the quality of learning and students' learning outcomes in a sustainable manner.

The students' learning outcomes in Cycle III indicate significant improvement, with the number of students achieving or exceeding the minimum completion criteria increasing to 35, up from Cycle II. It can be said that no student scored below the minimum completion criteria. The average learning score for the entire class reached 91, with a classical completion percentage of 100%. This result shows an improvement in learning outcomes from Cycle II to III, surpassing the target of classical completion. The increase from Cycle II to Cycle III was quite significant, at 4.09%.

The factors believed to contribute to the improvement of student learning outcomes in cycle III include better student preparedness, as they have adapted to learning using the TaRL approach integrated with the PBL model. In this context, students are able to engage in the learning process with a higher level of independence and active participation at each stage of the learning process, including stronger group collaboration during problem-solving. Additionally, the teacher's ability to create a comfortable and conducive classroom environment plays a crucial role in enhancing student motivation, which, in turn, accelerates the understanding of the concepts being taught. The optimal implementation of the TaRL approach and the PBL model also contributes to the success of learning, as it encourages students to think critically and become deeply engaged in the learning process. The use of learning media, such as PowerPoint slides that present the material clearly and consistently, as well as the provision of Student Worksheets (LKPD) tailored to the students' skill levels, further enriches the students' learning experience. Moreover, appropriate assessment and evaluation processes that meet students' needs have a positive impact on improving their learning outcomes. Continuous evaluation and reflection provide constructive feedback to both students and teachers, which plays a significant role in enhancing the quality of learning and optimizing student learning outcomes. Thus, the combination of these factors plays a key role in improving the effectiveness of learning and optimizing student learning achievements in cycle III. These results are supported by research conducted by Susanti et al., (2024) which shows that the consistent implementation of the TaRL approach integrated with the PBL model in mathematics learning can improve students' mathematics learning outcomes. This is because, after

applying this strategy, students demonstrate active participation during the learning process, increased motivation, independence, and strong collaborative attitudes within their groups during problem-solving.

Conclusion

Based on the research findings and discussion, the application of the Teaching at the Right Level (TaRL) approach integrated with the Problem-Based Learning (PBL) model has proven effective in improving the mathematics learning outcomes of students in class X-1 at SMAN 3 Mataram in the second semester of the 2023/2024 academic year. This is evident from the significant improvement in learning outcomes at each research cycle. In the pre-cycle, the students' learning outcomes showed initial results that served as a baseline for comparison. After implementing this approach in Cycle I, the learning outcomes increased by 7.11%. This improvement indicates a positive response from students to the teaching method used. Next, in Cycle II, the students' learning outcomes increased even more sharply, with an increase of 9.31% compared to Cycle I. This improvement indicates that students became more accustomed to and able to adapt to the teaching method, which emphasized problem-solving and was suited to their level of understanding. Finally, in Cycle III, the improvement in learning outcomes continued, although not as much as before, with an increase of 4.09% compared to Cycle II. This shows that, even though the rate of improvement began to decrease, the approach remained effective in driving overall improvements in students' mathematics learning outcomes.

Another factor that contributed to the improvement of mathematics learning outcomes is that the TaRL approach integrated with the PBL model also effectively enhanced students' concentration during learning through active participation in group discussions and the use of student worksheets adjusted to students' cognitive levels.

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