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IMPROVING STUDENT LEARNING OUTCOMES WITH THE TARL APPROACH TO SCIENCE SUBJECTS IN ELEMENTARY SCHOOLS

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ABSTRACT

This project uses the Teaching at The Right Level (TaRL) methodology to enhance students' learning outcomes in Natural and Social Sciences (IPAS) courses. Classroom Action Research (CAR), the research methodology employed, is divided into two cycles, each comprising diagnostic testing, student categorization according to comprehension level, and the implementation of suitable learning techniques. The study's findings suggest that using the TaRL technique can significantly enhance students' learning outcomes. The percentage of students who completed the classical portion rose from 30.76% in the pre-cycle to 84.61% in cycle II, while the average student score rose from 60.92 in cycle I to 78.54 in cycle II. This method enhances learning outcomes and positively affects student motivation and engagement. As a result, the TaRL approach may be a valuable tactic for addressing variations in students' comprehension levels and fostering more inclusive, individual-centered learning.

Keywords: Teaching at The Right Level (TaRL), results of learning, IPAS

INTRODUCTION

Education plays a vital role in forming an intelligent and competitive generation. Education is not just a transfer of knowledge but also building character and developing 21st-century skills, including critical thinking, creativity, communication, and collaboration. In the education system in Indonesia, various innovations have been made to improve the quality of learning. One of them is the implementation of the Independent Curriculum, which provides teachers with the flexibility to adjust learning according to student needs (Cholilah et al., 2023). However, in practice, there are still gaps in learning outcomes in the classroom due to the heterogeneity of student abilities.

The government has attempted to address this issue with various education programs, including improving teacher competency and providing more varied teaching materials (Bayar et al., 2020; Milazzo et al., 2008). However, learning challenges are still found, especially in science subjects. Many students have difficulty understanding science concepts because they are abstract and require experience-based understanding.

In addition, differences in students' learning styles influence the effectiveness of classroom learning (Prabha, 2020; Umami, 2022).

The Teaching at The Right Level (TaRL) approach is one method that can overcome this problem. TaRL emphasizes initial assessment to determine students' level of understanding and group them based on their abilities, not their class level (Jauhari et al., 2023). This approach has been implemented in various countries and has proven effective in improving learning outcomes, especially for students who experience delays in understanding the subject matter. With learning differentiation, students can learn according to their level of understanding, thereby improving academic skills and self-confidence. (Syarifudin et al., 2022; Tasrif et al., 2023).

Based on initial observations at SDN Karangdukuh, only 4 out of 13 students achieved the KKTP in science and natural sciences. The main factor causing low learning outcomes is the learning method, which is still conventional and does not consider students' individual differences. Therefore, this study aims to apply the TaRL approach to improve student learning outcomes in science and natural sciences. This approach is expected to improve students' conceptual understanding and learning motivation by using diagnostic assessment and ability-based grouping strategies.

LITERATURE REVIEW

No title was found that was the same as this study based on a literature review of several studies. However, several relevant studies discuss the implementation of the Teaching at the Right Level (TaRL) approach in the context of learning, and several literature reviews integrate the findings of several studies. (Syarifudin et al., 2022).

The first study by Jauhari Tanthowi et al. (2023) examined the effectiveness of the TaRL approach in improving students' interest and learning outcomes in mathematics. This study used the Classroom Action Research (CAR) method with two cycles, each consisting of two meetings. Data were collected through questionnaires and written tests. The results showed that the TaRL approach encouraged teachers to provide different treatments according to student's level of development so that their interests and learning abilities increased. Indicators of the success of this study include an increase in the percentage of students' interest in learning from the category "less" (50%) to "sufficient" (66%) and an increase in the percentage of learning outcome

completion by 40.7% (from 9.3% to 50%). In addition, the average student score increased from 63 in cycle I to 79 in cycle II. These findings indicate that the TaRL approach effectively improves students' interest and learning outcomes, especially in mathematics learning.

The second study was conducted by Melinda Cahya Ningrum et al. (2023), which discussed implementing the TaRL approach to increasing student motivation in physics learning. The method used was PTK, which used data collection techniques through observation and questionnaires. The study results showed that 68.80% of students felt happy during the physics learning process with the TaRL approach. Student comfort in learning increased because of grouping based on their respective ability levels. In addition, students also liked working together in groups to complete assignments. These findings indicate that the TaRL approach increases learning motivation and creates a more collaborative and enjoyable learning environment for students.

The third study was conducted by Ahyar et al. (2022), who examined implementing the TaRL learning model to improve students' basic reading literacy skills in early elementary schools. This study used a descriptive method with a qualitative approach. Data was collected through oral tests, which were carried out three times, namely the initial and two follow-up tests. The study showed that applying the TaRL model could significantly improve students' reading skills. This finding confirms that the TaRL approach is practical in learning mathematics and physics and in the context of basic literacy, especially reading. This shows the flexibility of the TaRL approach in various learning areas.

The findings from the three studies indicate that the TaRL approach is practical because it adapts learning to the level of students' abilities, creates a comfortable learning environment, and encourages collaboration between students. Although no study is the same as this, the findings provide a strong basis for developing further research on implementing the TaRL approach in different contexts.

METHODOLOGY

This research is a Classroom Action Research (CAR) with the Kemmis & Taggart model, which consists of four stages: planning, implementation, observation, and reflection. The research was conducted at SDN Karangdukuh, Jogonalan District,

Klaten Regency, in the 2024/2025 academic year. The subjects of this study were 13 fifth-grade students, consisting of 3 males and 10 females. This research was conducted because low student learning outcomes were found in science, so the Teaching at The Right Level (TaRL) approach was applied as an alternative learning strategy.

Data were collected through observation, learning outcome tests, and documentation. Observations were conducted using observation sheets to assess the implementation of learning. Learning outcome tests were given at the end of each cycle to measure student understanding. Meanwhile, documentation includes photos, learning videos, and student learning outcome scores as supporting evidence for the research. Data analysis was conducted descriptively quantitatively and descriptively qualitatively. Quantitative data were analyzed by calculating the percentage of learning outcome achievement. Qualitative data were analyzed based on observation results regarding student involvement and the effectiveness of the TaRL approach in science learning. This research is considered successful if it meets the indicators of success, namely individual completeness achieved if students get a score of ≥75 and classical completeness if at least 70% of students get a score above 75.

RESULT AND DISCUSSION

This classroom action research was conducted in class V of SDN Karangdukuh, Jogonalan District, Klaten Regency, focusing on improving student learning outcomes in science and natural sciences. This research was explicitly designed by adopting the Teaching at The Right Level (TaRL) approach, which addresses the heterogeneity of student abilities in the class. The TaRL approach allows for more focused and needs-based learning, where the material is adjusted to the level of understanding of individual students. This approach is relevant in the context of SDN Karangdukuh, which showed a striking gap in learning outcomes based on initial observation results. Of the 13 students, only four achieved the Learning Objective Achievement Criteria (KKTP) in science and natural sciences. This reflects the ineffectiveness of the previously applied learning methods, which tend to be conventional and less able to accommodate differences in each student's learning styles and abilities.

This problem is further emphasized by observations showing that the traditional learning methods only focus on one approach for the entire class without considering

the diversity of students' ability levels. As a result, students with higher abilities tend to feel bored, while students with lower abilities find it challenging to follow the learning. This gap not only impacts the achievement of learning outcomes but also affects students' motivation and confidence in following lessons. To overcome this, the study was designed with a classroom action approach through two cycles, each consisting of two meetings. Each cycle aims to implement the TaRL strategy in stages, from the initial assessment, grouping students based on ability, to implementing more interactive and directed learning strategies.

The initial observations also revealed that many students had difficulty understanding the concepts of science and science that tend to be abstract. This can be attributed to the minimal use of varied and engaging learning media. The teaching methods previously applied were mostly lecture-based and tended to be monotonous, so students lost interest in being active in the learning process. By implementing the TaRL approach, this study aims to improve learning outcomes quantitatively and the quality of students' learning experiences by creating a more inclusive and individual-centered learning environment. This approach is considered a promising solution to create effective learning, which helps students who have difficulty understanding the material and provides appropriate challenges for superior students.

Implementing the TaRL approach is expected to encourage more adaptive learning, where each student can learn at a level that suits their capacity. In addition, this study also provides an opportunity to evaluate the effectiveness of this method in the context of science learning, which is one of the innovative steps to improve the quality of education at SDN Karangdukuh as a whole. Thus, this approach is not only an effort to improve learning outcomes but also a strategy to create equitable learning, which can reach all students regardless of their initial ability level.

Results of Cycle I Research

In Cycle I, the study began with a diagnostic assessment aimed at identifying students' initial level of understanding. The results of this assessment were used to group students into learning groups based on their ability levels. This step is important to ensure that the Teaching at The Right Level (TaRL) approach can be implemented

optimally, where each group receives materials and guidance appropriate to their respective levels of understanding. Learning was carried out through two meetings, focusing on the TaRL approach based on learning differentiation.

The results of the formative test conducted in Cycle I showed an increase in the average score of students. In the first meeting, the average score reached 60.92; in the second meeting, it increased to 64.85. However, the percentage of classical completion was still below the predetermined success target, which was 46.15% in the first meeting and 53.84% in the second meeting. This shows that although the TaRL approach has begun to impact student learning outcomes positively, its implementation has not been fully effective in achieving the expected success indicators.

Various obstacles were found during the implementation of Cycle I, which affected the success rate of the TaRL approach. One of the main obstacles was students' lack of interest in learning. This was mainly caused by the learning media, which was still less interesting and conventional. Media such as textbooks or lecture methods tended to be monotonous, so students found maintaining their attention during the learning process challenging. In addition, some students seemed less focused and were often distracted by other activities, such as chatting with their deskmates or playing with stationery, which could hinder their concentration and understanding of the material being taught.

Another identified obstacle is the difficulty experienced by some students in understanding the learning material, especially in abstract concepts. Although they have been grouped based on ability, some students still find it difficult to follow the learning, especially in understanding the concepts of science and science that require in-depth understanding. This indicates that the teaching strategies applied are not fully effective in bridging the gap in understanding between students.

As part of the reflection, the researcher noted that the obstacles faced during Cycle I did not only come from the students' internal factors but also from the teaching methods that were still in the adaptation stage. The TaRL approach requires careful planning, including selecting appropriate learning strategies and media to suit the student's level of understanding. In addition, this approach also requires flexibility from the teacher to interact with each group of students intensively so that learning can take

place more effectively. At the end of Cycle I, the researcher concluded that significant improvements were needed in implementing learning in Cycle II, emphasizing interactive and collaborative aspects.

To address the existing obstacles, the improvement plan in Cycle II includes using more interesting learning media, such as visual aids and animated videos. These media are designed to increase student interest and make learning more enjoyable. In addition, the researcher also plans to provide additional guidance to students who still have difficulty understanding the material, as well as rearranging the seating so that students with lower abilities can more easily get attention and guidance from the teacher. With these steps, it is hoped that learning outcomes in Cycle II can increase significantly compared to Cycle I.

Results of Cycle II Research

Based on reflections on the obstacles and successes encountered in Cycle I, the researcher made various improvements designed to optimize learning in Cycle II. These improvement steps involved innovations in learning methods and strategies to increase students' attention, involvement, and understanding of the science subject matter. One foremost improvement was using more interesting learning media, such as concrete teaching aids and animated videos. These media not only help explain abstract concepts in science subjects but can also attract students' attention so that they are more focused and actively involved during learning. Teaching aids visualize complex material, while animated videos provide a more interactive and enjoyable learning experience.

Another intervention teachers carry out is providing additional guidance to students who have difficulty understanding the material. This additional guidance is tailored to student's individual needs, and the exercises given are designed to be more structured and gradual according to their level of understanding. In this guidance session, teachers provide direct feedback so students can identify their weaknesses and immediately improve them. This guidance helps students who are having difficulty and motivates them to continue trying to improve themselves.

Another change made in Cycle II was the rearrangement of student seating arrangements. Groups with lower abilities were placed at the front of the class so that the teacher could more easily provide direct guidance. This strategy also allowed students

who needed more attention to feel closer to the teacher so they did not feel neglected. This grouping improved the quality of guidance and created a more supportive learning atmosphere for students with varying ability levels.

The formative test results in Cycle II showed a significant increase compared to Cycle I. The average score of students increased from 68.08 in the first meeting to 78.54 in the second meeting. This increase shows that the Teaching at The Right Level (TaRL) approach applied is increasingly effective in improving students' understanding of the science subject matter. In addition, the percentage of classical completion also experienced a significant spike, from 61.53% in the first meeting to 84.61% in the second meeting. Thus, the indicator of research success, namely, at least 70% of students achieving a score above the KKTP, has been achieved in Cycle II.

This study also noted positive changes in students. During the learning process in Cycle II, students showed tremendous enthusiasm in completing the tasks given. They were also more confident in asking questions, reflecting their increased curiosity about the subject. Group discussions became more active, with many students sharing opinions and helping each other understand the material. These changes indicate that the learning strategies implemented not only improved learning outcomes but also the affective aspects of students, such as their motivation, courage, and self-confidence.

The significant improvement achieved in Cycle II shows that the improvements made based on reflection from Cycle I have successfully overcome most of the previous obstacles. The implementation of the TaRL approach, accompanied by innovations in learning media, additional assistance, and adjustments to seating arrangements, has created more effective, inclusive, and enjoyable learning. These results not only provide benefits in the context of science subjects but also provide practical guidance for teachers in implementing adaptive learning strategies to accommodate differences in student abilities.

Table 1. Learning results in every test

No	Action	**Classical completion**
1	pre-cycle	30,76 %
2	cycle I	49.99 %
3	cycle II	73,07 %

Based on the table above, the TaRL approach positively impacts student learning outcomes in the learning process, which can be seen in the improvement in each cycle.

DISCUSSION

Implementing the Teaching at The Right Level (TaRL) approach in science learning in grade V of SDN Karangdukuh has significantly impacted student learning outcomes, especially in overcoming heterogeneity of abilities in the class. This approach changes the paradigm of conventional learning, which was previously uniform to be more flexible, by adjusting learning materials and methods based on the level of understanding of individual students so that each child can learn according to their capacity and needs. (Jauhari et al., 2023; Mubarokah, 2022). In its implementation, the TaRL approach involves an initial assessment to identify student abilities, grouping based on level of understanding, and providing targeted learning strategies according to needs, which allows teachers to pay more attention to students who need extra help while still providing appropriate challenges for students who understand the material faster. (Avianti et al., 2023; Indartiningsih et al., 2023). This strategy focuses on improving academic learning outcomes. It aims to create a comfortable and inclusive learning environment where students feel valued and can develop according to their potential without feeling pressured or left behind by their friends.

The TaRL approach allows students who previously had difficulty understanding abstract concepts in science to learn in a more structured way that suits their level of understanding. In contrast, more capable students can develop their potential through more challenging materials. In addition, the TaRL approach also encourages the creation of more collaborative interactions among students, where they can help each other and share knowledge in homogeneous learning groups based on ability (Ahyar et al., 2022; Larasati et al., 2023). This improves academic understanding and develops social skills such as cooperation, communication, and empathy, which are important aspects in shaping student character. The TaRL approach not only succeeded in improving learning outcomes quantitatively but also created a more meaningful and enjoyable learning experience for all students. The TaRL approach allows teachers to be more adaptive in designing and implementing learning. By grouping students based on their abilities, teachers can provide materials that suit their level of understanding without causing pressure or a sense of being left behind among students. This aligns with research

conducted by Jauhari Tanthowi et al. (2023), which found that the TaRL approach can improve student interest and learning outcomes. In the context of this research, the TaRL approach can encourage teachers to adjust teaching methods dynamically, thereby increasing students' learning motivation and academic outcomes, especially in mathematics learning.

This study is supported by Melinda Cahya Ningrum et al. (2023) findings, which showed that the TaRL approach effectively creates a comfortable and collaborative learning environment. Students feel more comfortable learning because they are grouped according to their abilities, so they do not feel pressured by classmates who understand the material faster. This grouping allows students to work together in small groups, where students with higher abilities can act as mentors for their group mates. This improves academic understanding and encourages social skills such as cooperation and communication.

This study also aligns with the results of research conducted by Ahyar et al. (2022), which found that the TaRL approach can improve the basic reading literacy skills of elementary school students. Although the study context differs from this one, the findings show the flexibility of the TaRL approach in various learning areas. In research at SDN Karangdukuh, the TaRL approach applied to the science subject was able to answer learning challenges previously considered difficult by students, especially in abstract and complex materials.

The Teaching at The Right Level (TaRL) approach implemented in learning activities has significantly contributed to creating an inclusive learning environment at SDN Karangdukuh, where every student feels valued and has an equal opportunity to develop according to their potential. This method provides a fair opportunity for every student to obtain material appropriate to their ability level so that they do not feel left behind or burdened by their friends who understand the material faster. Thus, students with lower abilities can learn at a pace that suits their understanding. In contrast, more capable students can develop their potential through more challenging material without feeling hampered by differences in ability in the class.

The ability-based grouping strategy also allows more capable students to share knowledge with their group mates, creating positive interactions that encourage more collaborative and enjoyable learning. (Farmer et al., 2021; Nhan & Nhan,

2019)Inhomogeneous learning groups are based on ability; students who grasp the material quicker can mentor their peers, helping explain difficult concepts and providing support in completing assignments. This not only improves the academic understanding of students who need help but also develops social skills such as empathy, communication, and cooperation among students.

The implementation of group-based learning allows students to learn not only from teachers but also from experiences and interactions with their friends, which creates a more lively and meaningful learning dynamic. This interaction encourages students to be more active in learning because they feel more comfortable and confident asking questions, discussing, and expressing their opinions in small groups. In addition, this collaborative learning also helps students to develop 21st-century skills, such as critical thinking, creativity, and the ability to work in a team, which are important skills to face future challenges. The TaRL approach creates an inclusive learning environment and facilitates the development of holistic social and academic skills for all students.

The Teaching at The Right Level (TaRL) approach also plays an important role in increasing students' motivation and self-confidence because it ensures that each student gets learning materials and methods appropriate to their level of understanding. When students feel that the material being taught is appropriate to their abilities, they become more enthusiastic and motivated to follow the learning because they no longer feel burdened by material that is too difficult or bored with material that is too easy. This creates a greater sense of self-confidence because students feel able to master the material being taught and achieve the learning objectives that have been set.

This increase in motivation and self-confidence is reflected in students' active participation during the learning process. They are not only passive recipients of information but also actively involved in various learning activities. Students show the courage to ask questions when they do not understand a concept, participate in group discussions enthusiastically, and complete the tasks given with enthusiasm. This active participation improves their understanding of the subject matter and creates a more dynamic and interactive learning atmosphere where students feel more involved and responsible for their learning process.

Implementing the TaRL approach also encourages learners to be more confident in expressing their opinions and ideas because they feel their abilities are recognized and

appreciated. The courage to actively participate in this learning positively impacts academic learning outcomes. It helps learners develop communication, critical thinking, and collaboration skills, which are important for facing future challenges. The TaRL approach increases learners' motivation and self-confidence and creates a supportive and empowering learning environment where every learner feels they have an equal opportunity to succeed. This shows that the TaRL approach is effective not only in improving learning outcomes but also in developing the affective aspects of learners.

Thus, the TaRL approach in science learning in class V of SDN Karangdukuh has created inclusive, interactive, and learner-centered learning. This approach is an innovative solution that can overcome learning gaps due to the heterogeneity of student abilities in the class. Moreover, applying the TaRL approach also inspires the development of adaptive learning strategies in the broader context of basic education.

The TaRL approach also has important implications for developing an inclusive learning culture. By grouping students based on their abilities, this approach creates a learning environment that values the diversity of ability levels in the classroom. Students no longer feel left behind or pressured by their peers, who are quick to grasp the material because they are learning in groups with similar ability levels. This approach also allows students to learn collaboratively, where more capable students can act as mentors to their peers. This group-based learning model improves students' academic understanding and develops social skills, such as cooperation, communication, and mutual respect.

Implementing the Teaching at The Right Level (TaRL) approach requires thorough teacher preparation because this approach demands careful and systematic planning to ensure that learning can be tailored to students' needs. Teachers need to prepare teaching modules that can support differentiation-based learning, where the modules must include various materials and learning methods tailored to the level of understanding of each group of students. This allows teachers to provide materials appropriate to students' abilities, both for those who need more intensive guidance and those who are ready to face higher challenges. In addition, preparing structured Student Worksheets (LKPD) is also an important step in supporting the TaRL approach because LKPDs designed according to the level of students' abilities can help them learn independently while maximizing their understanding of the material being taught. LKPDs that are tailored to the needs of students not only function as learning aids but

also as guides that make it easier for students to follow learning in a gradual and directed manner. In addition to teaching modules and LKPDs, innovative learning media, such as animated videos and teaching aids, also play an important role in increasing students' attention to learning. Using creative and engaging media can help students understand abstract concepts more concretely and enjoyably so that they are more motivated and actively involved in learning. This learning media can also be an effective tool for explaining complex materials because the visualization and interactivity offered can make it easier for students to absorb information.

Implementing the TaRL approach cannot be carried out optimally without comprehensive support from the school. This support includes providing adequate learning facilities, such as flexible classrooms for grouping students, access to educational technology, and teaching materials that support the TaRL approach. Training for teachers is also essential to ensure that they have adequate skills to implement this approach effectively. This training can include diagnostic assessment techniques, grouping strategies, the use of technology-based learning media, and how to motivate students to be more active in learning. With support from the school, the TaRL approach can be implemented sustainably, thus positively impacting the quality of learning in elementary schools.

The success of implementing the Teaching at The Right Level (TaRL) approach depends on teachers and the synergy between all related parties, including students, parents, and schools. Parents can play an active role in supporting their children's learning process at home by ensuring that children have sufficient learning time, utilizing learning media provided by the school, and providing moral support and motivation so that children remain enthusiastic about learning. The role of parents is vital in creating a consistent learning environment between school and home so that students can continue to develop their understanding outside of school hours.

CONCLUSION

Based on the results of the classroom action research that has been carried out, it can be concluded that the implementation of the Teaching at The Right Level (TaRL) approach in science learning in class V of SDN Karangdukuh has succeeded in significantly improving student learning outcomes, which can be seen from the increase

in the percentage of classical completion from 30.76% in the pre-cycle, increasing to 49.99% in cycle I, and reaching 73.07% at the end of cycle II. The TaRL approach allows teachers to adjust learning to students' level of understanding so that each student can learn according to their abilities without feeling burdened by material that is too difficult or bored with material that is too easy. This aligns with the principle of student-centered learning, where every child has the same opportunity to develop according to their potential, creating an inclusive and supportive learning environment for all students, regardless of the differences in their initial abilities.

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