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The Effect of Learning with Approach Teaching at The Right Level Regarding Mathematics Learning Outcomes of Class X Students

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ABSTRAK

Learning outcomes are defined as students' academic achievements in mastering competency achievement indicators in a material after following the learning process. The results of an initial study at SMA Negeri 4 Tanjungpinang showed that students' mathematics learning outcomes were still relatively low. Implementation of learning with an approach to Teaching at The Right Level (TaRL) is a solution that can be offered to overcome this problem. This research aims to determine the effect of learning with this approach, Teaching at The Right Level (TaRL), on the mathematics learning outcomes of class X students at SMA Negeri 4 Tanjungpinang. The approach used is a quantitative approach. A quasi-experimental with pretest-posttest control group design was applied in this research. The sample for this research was selected randomly through cluster sampling so that class X.4 had 35 students and class X.5 had 32 students as the research sample. Pretest-posttest as a data collection technique. Data were analyzed using an Independent Sample t-test with a significance level of 5%. The research results show an influence of the application of learning with the teaching approach at the right level (TaRL) on student learning outcomes in quadratic equation material in class X SMA.

INTRODUCTION

Education is a planned effort to create people who are active in improving their skills so that they have religious and spiritual strength, self-control, personality, intelligence, noble morals, and abilities for themselves, citizens, and the nation through activities and learning processes, in Law no. 20 of 2003 concerning the National Education System (Purwowidodo & Zaini, 2023:). A person's change in a more positive and knowledgeable direction is obtained through a prolonged educational process. This aligns with Sujana's (2019) opinion that education is a continuous and never-ending journey that can produce sustainable quality to shape future individuals rooted in the nation's cultural values and Pancasila. As a result, the higher a person's education, the more knowledge they have, making it easier to apply their knowledge and understanding in facing and solving problems.

The independent curriculum (Kurikulum Merdeka) is a new idea that contains educational guidelines designed to support the implementation of education to create a superior generation in the future. The independent curriculum aims to change the educational paradigm from a teacher-centred approach to a more student-oriented approach and learning based on students' needs and interests. Law 20 of 2023 article 36, paragraph (2) concerning the independent curriculum states that the curriculum at all levels and types of learning is developed with the principle of diversification by school characteristics, regional capabilities, and student participation. Diversified curriculum development aims to adapt the learning program in each school to the special conditions and unique capabilities found in a region to accommodate the various variations that exist. Therefore, the independent curriculum exists as a learning program that aims to accommodate the diverse learning needs of students by providing different learning approaches and aligning the curriculum with students' individual needs. Apart from that, learning, according to the independent curriculum, aims to provide opportunities for students to experience learning that is calm, relaxed, enjoyable, without stress, without pressure, and shows the talents inherent in students (Rahayu et al., 2022).

According to Cholilah et al. (2023), the principle of an independent curriculum is the freedom to learn with completely student-centered learning so that students are free to choose exciting lessons. Freedom in education is expected to create a pleasant atmosphere so that student's understanding of learning material can improve because the ability to understand learning material is the primary key to achieving learning goals (Lestari & Kuryani, 2023).

Mathematics is an essential basic science to master because it relates to everyday activities. Mathematics is an essential scientific foundation for preparing superior human resources with high competence and integrity (Rahmawati, 2020). According to curriculum demands, mathematics learning in schools aims to enable students to understand mathematical concepts, use mathematical reasoning, solve mathematical problems, communicate ideas in solving problems, and appreciate the usefulness of mathematics with curiosity, attention, and high interest in mathematics (Kamarullah, 2017). However, these learning objectives often need to be achieved better, resulting in unsatisfactory student learning outcomes.

Learning outcomes are defined as students' academic achievement in mastering competency achievement indicators in a material after the learning process. Students' cognitive achievements in mathematics are the results obtained through specific evaluations to assess their ability, understanding, and mastery of the material after going through the mathematics learning process within a certain period (Nurianti et al., 2021). Based on the initial research results in class X SMA Negeri 4 Tanjungpinang, students' mathematics learning outcomes are still relatively low. Data from students' daily assessment test results on exponents, logarithms, and SPLTV material shows that of the 247 students who took the test, only 41 students met the criteria for achieving learning objectives (KKTP) with a completeness determination of 75 in mathematics. In comparison, the other 206 students had yet to reach the KKTP. Based on this data, it can be seen that the percentage of students who complete mathematics subjects is only 17%, while those who do not complete it are 83%. Apart from that, based on the results of students' test answers on SPLTV material, it is known that students have not been able to comprehend and understand the meaning of the questions given, students have not understood the steps to solve the questions, and students have not been proficient in basic mathematical calculations. Many students consider mathematics to be an abstract science and difficult to understand. It becomes increasingly difficult when students have to study advanced material while still needing to gain sufficient mastery to understand basic mathematical concepts (Buyung et al., 2022).

Factors for low learning outcomes can be caused by teachers and students (Maghfiroh, 2024). A teacher is a professional responsible for designing, guiding the learning process, and evaluating the results (Nurzannah, 2022). Teaching with a less student-centered and less innovative approach and minimal student participation can cause low student learning outcomes (Maghfiroh, 2024). Apart from that, the mismatch between the delivery of information and students' needs at that time causes a gap in students' levels of understanding (Lestari & Kuryani, 2023).

Students are the main subject in education. Students are subjects who receive information provided by the teacher. Learning in schools generally groups students according to age, but increasing age is outside the development of students' understanding. Teachers must realize that students have different characteristics at their experience level; this allows students to have various ways of receiving, processing, and conveying information (Lestari & Kuryani, 2023). Every student has diverse potential, so it is essential to consider and accommodate differences in interests, talents, learning profiles, backgrounds, and readiness to implement learning (Iskandar, 2021). To overcome the diversity of students' levels of understanding, teachers need an approach adapted to the development stage of students' understanding that is relevant to the independent curriculum.

The results of the researchers' initial study at SMA Negeri 4 Tanjungpinang revealed that the school had implemented an independent curriculum specifically for class X. The presence of the new curriculum means that teachers are still stumped in carrying out differentiated learning, and there are even teachers who do not know about it because of a lack of understanding about independent learning, lack of supporting media in learning, and difficulties in implementing differentiated learning (Fauzia & Hadikusuma, 2023). This shows that teachers have not treated students according to their needs. The independent curriculum, the new Indonesian national curriculum implemented in stages, promotes learning that pays attention to student diversity and needs. Each student has diverse characteristics and learning needs and should not be treated the same in terms of learning. This problem was found in the field. It was known that there were students who were slow in understanding the material and those who already understood the material; this shows a gap in students' understanding. If the gap between the actual situation and the desired one is not addressed, it will impact low student learning outcomes (Widiarti et al., 2021).

An important step that teachers can take in dealing with the problems they face is to choose a learning approach that prioritizes the diversity of student characteristics based on the student's level of understanding. The approach that can be applied to this condition is *teaching at the right level* (TaRL). Term *teaching* in Indonesian means teaching, whereas *the right level* means at the right level. It means *teaching at the right level* is a lesson that suits the right level. Generally, teaching at the right level is a learning strategy that groups students according to the student's initial level of ability (Kemendikbudristek, 2021; Mubarokah, 2022; Lestari & Kuryani, 2023). According to Ahyar et al, (2022) TaRL is an approach that focuses on students so that in learning, students are grouped based on their ability level, not based on class level and age. TaRL is an approach that helps education systems focus and work together to improve student learning outcomes (Avianti et al., 2023).

Previous research has conducted studies on approaches *to teaching at the right level*. Research conducted by Avianti et al. (2023) shows that using the TaRL approach can improve student learning outcomes, with a percentage of completeness *pretest* rose by 15,38% to 74,36% in *the posttest*. The research conducted by Jauhari et al. (2023) shows that learning with the TaRL approach can improve student learning outcomes with a completion percentage of 40,70% in cycle 1 to 50% in cycle 2. Therefore, it is essential to conduct research titled "The Effect of Learning with Approach Teaching at The Right Level Regarding the Mathematics Learning Outcomes of Class X SMA Students ". It is hoped that the results of this research can help teachers design learning strategies in accordance with the independent curriculum. The aim of this research is to determine the effect of learning with this approach *at the right level* on the mathematics learning outcomes of class X students at SMA Negeri 4 Tanjungpinang.

METHOD

This research is quasi-experimental by design of a pretest-posttest control group. This type of research is used because there is a control group, but this method is not completely effective in controlling external variables that influence the implementation of the experiment (Hardani et al., 2020). This research uses a quantitative approach, namely a method that involves design and strategies for collecting, processing, and analyzing data (Asari et al., 2023). The data analyzed is data in the form of pretest and posttest values as a result of student learning in the cognitive domain in quadratic equation material in both research classes.

A population is a general group of objects or subjects with certain qualities and characteristics determined by researchers to be studied and concluded (Sugiyono, 2022). The population in this study were class X students of SMA Negeri 4 Tanjungpinang. Cluster sampling is a technique used for random sampling from a sample group, where the sample taken is a group, not individuals within the group, so that the sample group chosen is a class because of the application. Cluster Sampling In general, in the world of education, classes are used in clusters (Ary et al., 2010). In this case, the group in question is a class, so class X.5 has been chosen as the experimental class with 32 students, while class X.4 is the control class with 35 students.

Research data was collected through tests as the main instrument. The test includes two parts, namely *pretest* and *posttest*, in the form of essay questions on quadratic equations to measure students' cognitive abilities in both research classes. The tests in this study were prepared based on indicators of achievement of learning objectives (IKTP), which were derived from the learning objectives (TP) of quadratic equation material as follows: (1) students can determine the roots of quadratic equations, (2) students can solve everyday problems that related to quadratic equations.

Initial capability data (pretest) and final capability data(posttest) are the data being analyzed. The data was analyzed descriptively statistically, then inferentially statistically with parametric statistical tests using the Independent Sample t-test. The t-test was performed after the data pretest-posttest fulfilled the prerequisite test, namely normality testing (using the Shapiro Wilk) and homogeneity testing (using test Barttlet) with a significance level of 5%. The test criteria are if the value is ($Sig \geq 0{,}05$), t then the prerequisite test is met, and the data does not meet the prerequisites if the value is ($Sig < 0{,}05$). Furthermore, the t-test aims to determine the average equality of students' initial abilities and whether the treatment influences student learning outcomes. The positive influence of *treatment* This learning can be seen from the test results of the difference in average student learning outcomes by carrying out the right-hand side test, then the value *Sig.(2-tailed)* must be divided by 2 (Stanislaus, 2009). The testing criteria are using a significance level of 5 % ($\alpha = 0{,}05$). H_1 cannot be rejected if value *Sig*. $< 0{,}05$. Otherwise H_1 rejected if value *Sig* $\geq 0{,}05$.

Experimental classes will be given treatment learning with the approach Teaching at The Right Level (TaRL), while the control class will only given treatment expository learning. The TaRL approach steps in this research were carried out based on the TaRL steps proposed by Syarifudin et al. (2022) as follows: (1) Identify students' level of understanding based on the initial assessment results; (2) grouping students based on level of understanding; (3) teach material according to student's level of understanding; (4) conducting formative assessments and record the development of student understanding; (5) joint reflection; (6) conducting a summative assessment. The criteria for grouping students' level of understanding are based on the results of the student's initial assessment or pretest as follows:

Table 1. Criteria for grouping students' level of understanding

No.	Level of Understanding	Criteria
1.	Undeveloped	Have not yet mastered learning objectives (TP) 1 and 2
2.	Starting to develop	Have mastered learning objectives (TP) 1
3.	Developing according to expectations	Have mastered learning objectives (TP) 1 dan (2)

RESULT and DISCUSSION

Result

The learning activities were carried out in 3 meetings. In pre-learning activities, researchers mapped students into learning groups adjusted to the student's initial level of understanding. This grouping is based on the results of the pretest in quadratic equation material, which contains two learning objectives (TP). Based on the results of the pretest in the experimental class, it was found that 20 students had not mastered learning objectives (TP) 1 and 2, and 12 students had mastered learning objectives (TP) 1. Based on these results, students could be mapped into 2 groups: the undeveloped group (A) for students who had yet to reach TP 1 and 2 and the group starting to develop (B) for students who have mastered TP 1. Therefore, it can be formed 7 study groups comprised of 4 undeveloped groups (A) and 3 starting to develop groups (B), with each group consisting of 4 students.

Each meeting carries out preliminary activities, core activities, and closing activities. In the core activity, researchers group students according to their level of understanding based on the results of pretest students, namely group (A), which is still undeveloped a category, and group (B), which is starting to develop a category. Then, the teacher provides teaching according to the student's level of understanding, as in Table 2.

Table 2. Adjustment of learning with the TaRL approach based on student's level of understanding

The student's initial level of understanding	**Undeveloped (A)**	**Starting to develop (B)**
Process (how to teach)	Students are provided with reading materials and worksheets (A). LKS (A) contains consolidation questions with well-structured solution steps. Students are asked to work in groups when completing the LKS. Students are more guided to solve the consolidation questions, and teachers provide exceptional guidance, from delivering basic material to assisting when working on worksheets.	Students are provided with reading materials and worksheets (B). LKS (B) contains quadratic equation practice questions and general solution steps. Students are required to be more creative in solving problems. They are asked to work in groups and become peer tutors when solving problems. The teacher only supervises students and occasionally provides understanding of student work.
Product (output or performance that will be produced)	Students understand the material by solving reinforcement questions in LKS (A).	Students understand the material through solving practice questions contained in LKS (B) and can convey the results of their work through presentations.

The results of the descriptive analysis of students' initial and final abilities in understanding quadratic equations material for class X SMA can be seen in Table 3.

Table 3. Data on students' mathematical abilities

Descriptive statistics					
Information	**N**	**Minimum**	**Maximum**	**Average**	**Std. Deviation**
Pretest Exsperimental	32	0	40,5	17,8	11,4
Postest Exsperimental	31	21,6	100	64,3	23,0
Pretest Control	35	0	35,1	18,2	8,5
Postest Control	32	8,1	97,3	51,4	25,8

Table 3 shows that the distribution of data between the experimental class and control classes is based on the results of *pretest* and *posttest* periencing changes. Suppose the data meets the assumption of normality. In that case, the limit of 1 standard deviation or 68% of the 32 students or 21 students in the experimental class is in the pretest range between values 6,4 to 29,2.

Meanwhile, 68% of the 35 students or 23 students in the control class were in the score range *pretest* between values 9,7 to 26,7. The data distribution shows that the experimental class has more diverse initial abilities than the control class.

As for descriptive statistics for values the posttest shows that 68% of the 31 students or as many as 21 students in the experimental class, are in the value range posttest between values 41,3 to 87,7. Meanwhile, 68% of the 32 students or 21 students in the control class had grades *posttest,* which is still between the values of 25,6 to 77,2. The data distribution shows that the diversity of students' final abilities in the control class is greater than in the experimental class. Apart from that, the data distribution posttest shows that posttest students have improved and are significantly different. To prove whether the average posttest as student learning outcomes differ significantly, it is necessary to carry out inferential statistical tests with independent sample t-test.

Inferential statistical analysis was carried out twice in this study. The first analysis tests the difference in average initial abilities between the experimental and control classes to determine the equality of students' initial skills. Meanwhile, the second analysis tests the research hypothesis. This analysis was carried out to determine whether an influence treatment was given to student learning outcomes.

Test the difference in average students' initial abilities using inferential statistics obtained from grades pretest student. The initial step will be to carry out prerequisite tests, namely normality testing and homogeneity testing. The normality test results show that the sig value for the experimental class is 0,154 and the control class is 0,221. where the value is $(sig. \geq 0{,}05)$, it means H_0 that cannot be rejected. These results show that the value *pretest* in both research classes has a normal distribution. Next, based on the results of the value homogeneity test, the *pretest* known value $Sig\ Box's\ M$ 0,101 $>$ 0,05, value means that H_0 cannot be rejected. A conclusion can be drawn: the value of the pretest in both research classes is homogeneous.

Table 4. Test results for differences in the average initial abilities of students

Pretest	***df***	***Sig.(2-tailed)***	**Information**
Equal variances assumed	65	0,869	There is no significant difference

The test results in Table 4 reveal the value *Sig. (2-tailed)* is 0,869. Due to its value $sig \geq 0{,}05$, H_0 it cannot be rejected. These results also show that there is no significant difference in the average initial abilities in the two research classes. Thus, it can be concluded that the average initial abilities in the two research classes are equivalent.

Next, the difference in average students' final abilities will be tested using inferential statistics obtained from the grades of posttest students as a result of student learning. The initial step will be to carry out prerequisite tests, namely normality testing and homogeneity testing. The normality test results show that the experimental class value is 0,336 and the control class value is 0,183, where the value is $(sig. \geq 0{,}05)$, it means H_0 that cannot be rejected. These results show that the value *posttest* in both research classes has a normal distribution. They were next, based on the results of the value homogeneity test *posttest, the* known value $Sig\ Box's\ M$ 0,540 $>$ 0,05, so H_0 cannot be rejected. A conclusion can be drawn: the value of the posttest in both research classes is homogeneous.

Table 5. Test results of differences in average student learning outcomes

Posttest	***df***	***Sig.(2-tailed)***	**Information**
Equal variances assumed	61	0,039	There is significant difference

Table 5 shows that value *Sig. (2-tailed)* is 0.039. Because the test used is a right-sided test, the value $Sig. = \frac{1}{2} \times 0{,}039 = 0{,}0195$. We know that value $0{,}0195 < 0{,}05$, or worth $Sig < 0{,}05$. Thus H_1 it cannot be rejected, meaning that the average student learning outcomes in the experimental class are higher than the control class. This concludes that there is an influence of learning with the approach to teaching at the right level on students' mathematics learning outcomes.

Discussion

Based on the results of data analysis, it is known that significantly the two research sample classes have equivalent initial abilities. Proven from the results of statistical tests, the independent sample t-test in Table 3, where the value Sig. (2-tailed) is $0{,}869 > 0{,}05$, meaning that it can be ascertained that the student's initial condition is the same before receiving treatment. This is done to ensure that students have an equivalent initial state so that any increase in student ability (which is reflected in the difference in results between the experimental and control groups) is genuinely caused by differences in treatment which are given when teaching through the approaches, models, strategies applied, not by the initial conditions of students which may differ between these students (Isnawan, 2020). After ensuring the equality of students' initial abilities, the researcher provided different treatment in the two research classes. The experimental class received treatment learning with the TaRL approach, while the control class received learning using an expository approach.

After receiving treatment differently, a final ability test is carried out due to student learning. The results of the research hypothesis test in Table 6 show significant differences in student learning outcomes when obtaining grades *Sig. (2-tailed)* equal to 0,0195 and the results of a one-sided test (right-side test) $Sig. = \frac{1}{2} \times 0{,}039 = 0{,}0195$. By using the significance level 5%, it is known that the value of $0{,}0195 < 0{,}05$. the results of data analysis in this study indicates that the average learning outcomes of students in the experimental class (students who study using the *teaching at the right level*) are higher than students in the control class (students who learn with an expository approach).

The findings of this research prove that learning using the TaRL approach has a greater influence on students' mathematics learning outcomes than learning using the expository approach. This finding also aligns with the findings of Rahman (2023) , who concluded that using the TaRL approach can significantly improve student learning outcomes. This finding is also to the conclusions of Cahyono (2022), Jauhari et al. (2023), and Maghfiroh (2024), who obtained the results that the application of the TaRL approach can increase student interest and learning outcomes because learning is adjusted to students' initial abilities so that they more active and involved in the learning process. In this case, it can be concluded that the TaRL approach significantly affects student learning outcomes.

Each student has varying characteristics in their level of understanding; this allows students to have different ways of receiving, processing, and conveying information (Lestari & Kuryani, 2023). To overcome the diversity of students' levels of understanding, teachers need to understand students' needs and then use approaches that can accommodate this diversity, such as providing different treatments or teaching methods adapted to students' levels of understanding relevant to the independent curriculum. In the learning process, teachers can form study groups tailored to the student's level of understanding. Then, facilitate learning media such as worksheets, which contain strengthening questions and provide more intensive guidance to groups that still need to develop. For students who are starting to create, teachers can facilitate learning media such as worksheets containing practice questions with general steps for solving them, supervise students during group discussions, and occasionally provide guidance if necessary.

Learning with varied approaches, such as grouping students based on their level of understanding, illustrates the concept of differentiated learning according to the independent curriculum. The differentiated concept formed in the TaRL approach is differentiated based on student understanding. This differentiated learning can accommodate the diversity of characteristics and needs of students in the class, one of which is diversity in the level of knowledge when participating in class learning so that it can improve student learning outcomes.

This situation commonly occurs due to the application of learning with an approach adjusted to the right level of understanding *(*teaching at the right level*)*. It is a learning strategy designed according to students' learning abilities by providing varied teaching according to students' knowledge (Kemendikbudristek, 2022). Apart from that, Fardah et al. (2024) said that the TaRL approach also allows students to learn according to their initial understanding, allowing them to increase the potential for better learning outcomes.

These findings are also in line with the theoretical studies that have been carried out. This is normal because, with the TaRL approach, the teacher will provide treatment or teaching methods adapted to the diversity of student characteristics based on student understanding, especially by providing more guidance to students with low abilities. This situation makes most students more interested and motivated to learn (Saptariana et al., 2023). Apart from that, Maghfiroh (2024) said that students will feel comfortable and included in the learning process if they study at the right level. This makes students more motivated and actively involved in understanding teaching material. This high level of motivation encourages students always to learn, thereby achieving better learning outcomes. Increasing interest and motivation in learning also encourages students to understand teaching material to achieve the set learning goals actively.

Based on the results of observations of teachers' and colleagues' implementation of the TaRL approach to learning, it can be concluded that the learning activities have been carried out well in accordance with the design of the teaching module, and students are also actively involved in participating in the learning. However, some students still get grades *post-test* below the learning achievement standards (KKTP). This happens because students still need to gain basic mathematical skills, especially in basic calculations such as multiplication and division. These deficiencies can be seen in students' mistakes in solving mathematical questions and problems. Students also have difficulty solving the questions given, which causes anxiety when working on the *posttest* and prevents students from achieving the desired learning goals.

During learning with an expository approach in the control class, the teacher and colleagues' observations concluded that the learning process was based on the activity steps arranged in the teaching module. The results of the descriptive analysis in Table 3 also show that the average value pretest is 18,2, and the posttest is 51,4. These results indicate increased student learning outcomes after participating in the lesson. This increase was reinforced by students' high curiosity about the material presented by researchers visually in front of the class. Students actively asked questions and discussed with their friends while completing the exercises. This opinion is supported by Richana & Masithoh (2023), who say that the improvement process in students who apply the expository approach can be seen from changes towards improvement and increased action in the student learning process, such as increased participation and enthusiasm for student learning. This encourages students to be more critical in learning and increases their curiosity and ability to work together, ultimately creating a more dynamic, creative, and fun class atmosphere. However, the learning process using an expository approach needs to improve. In teaching, teachers tend to generalize students' abilities, even though each student has varying skills to understand the material, making it difficult for teachers to ensure that students understand the material being informed. In addition, students with slower comprehension abilities can be left behind in understanding the following material. This situation shows that the expository approach is less effective because students have different characteristics and needs.

CONCLUSION

The average mathematics learning outcomes in the experimental class were significantly higher than in the control class. Thus, learning with this approach teaching at the right level (TaRL) influences students' mathematics learning outcomes in class X SMA. Learning with the TaRL approach, adjusted to students' level of understanding, can improve students' mathematical understanding abilities in the cognitive domain, thereby contributing better to student learning outcomes than the descriptive approach. Therefore, researchers suggest that other researchers improve students' mathematical skills in other mathematical materials through learning approaches and teaching at the right level.

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REFERENCE

Ahyar, A., Nurhidayah, N., & Saputra, A. (2022). Implementasi model pembelajaran TaRL dalam meningkatan kemampuan literasi dasar membaca peserta didik di sekolah dasar kelas awal. JIIP - Jurnal Ilmiah Ilmu Pendidikan, 5(11), 5241–5246. https://doi.org/10.54371/jiip.v5i11.1242

Ary, D., Jacobs, L., & Sorensen, C. (2010). Introduction to Research in Education. (C.Caitlin (ed)). Nelson Education, Ltd.

Asari, A., Nababan, D., Amane, A. P. O., Kusbandiyah, J., Hertati, L., Maswar, Farlina, B. F., Pandowo, A., Purba, M. L., Zulkarnaini, & Ainun, A. N. A. (2023). Dasar penelitian kuantitatif (Issue 0). Klaten: Lakeisha.

Avianti, M. N., Setiani, A. R., Lestari, I., Septiawati, L., Saefullah, A., Studi, P., Biologi, P., Profesi, P., Prajabatan, G., Sultan, U., & Tirtayasa, A. (2023). Peningkatan hasil belajar peserta didik kelas XI melalui pendekatan TaRL (teaching at the right level) pada materi sistem ekskresi. JEUMPA: Jurnal Pendidikan Sains Dan Biologi, 10(2), 231–239. https://doi.org/10.33059/jj.v10i2.7610

Buyung, B., Wahyuni, R., & Mariyam, M. (2022). Faktor penyebab rendahnya pemahaman siswa pada mata pelajaran matematika di sd 14 Semperiuk. Journal of Educational Review and Research, 5(1), 46. https://doi.org/10.26737/jerr.v5i1.3538

Cahyono, S. D. (2022). Melalui model teaching at right level (TARL) metode pemberian tugas untuk meningkatkan motivasi dan hasil belajar peserta didik mata pelajaran prakarya dan kewirausahaan KD. 3.2 /4.2 topik perencanaan usaha pengolahan makanan awetan dari bahan pangan nab. Jurnal Pendidikan Tambusai, 6(2), 12407–12418. https://jptam.org/index.php/jptam/article/view/4431

Cholilah, M., Tatuwo, A. G. P., Komariah, Rosdiana, S. P., & Fatirul, A. N. (2023). Pengembangan kurikulum merdeka dalam satuan pendidikan serta implementasi kurikulum merdeka pada pembelajaran abad 21. Sanskara Pendidikan Dan Pengajaran, 1(02), 57–66. https://doi.org/10.58812/spp.v1i02.110

Fardah, D. K., Rosyidi, A. H., & Siswono, T. Y. E. (2024). Pengembangan perangkat pembelajaran dengan pendekatan teaching at the right level (TaRL) bagi guru matematika SMK. Jurnal Inovasi Hasil Pengabdian Masyarakat (JIPEMAS), 7(1), 208–217. https://doi.org/10.33474/jipemas.v7i1.20975

Fauzia, R., & Hadikusuma Ramadan, Z. (2023). Implementasi pembelajaran berdiferensiasi dalam kurikulum merdeka. Jurnal Educatio FKIP UNMA, 9(3), 1608–1617. https://doi.org/10.31949/educatio.v9i3.5323

Hardani, Andriani, H., Ustiawaty, J., Utami, E. F., Istiqomah, R. R., Fardani, Roushandy Asri Sukmana, D. J., & Auliya, N. H. (2020). Buku Metode Penelitian Kualitatif & Kuantitatif. Yogyakarta: Pustaka Ilmu Group.

Iskandar, D. (2021). Peningkatan hasil belajar siswa pada materi report text melalui pembelajaran berdiferensiasi di kelas IX.A SMP negeri 1 Sape tahun pelajaran 2020/2021. Jurnal Pendidikan Dan Pembelajaran Indonesia (JPPI), 1(2), 123–140. https://doi.org/10.53299/jppi.v1i2.48

Isnawan, M. galang. (2020). Kuasi-eksperimen. Lombok: Nashir Al-Kutub Indonesia.

Jauhari, T., Rosyidi, A. H., & Sunarlijah, A. (2023). Pembelajaran dengan pendekatan TaRL untuk meningkatkan minat belajar dan hasil belajar matematika peserta didik. Jurnal PTK Dan Pendidikan, 9(1), 59–74. https://doi.org/10.18592/ptk.v

Kamarullah. (2017). Pendidikan matematika di sekolah kita. Al Khawarizmi: Jurnal Pendidikan Dan Pembelajaran Matematika, 1(1), 21–32. https://doi.org/10.22373/jppm.v1i1.1729

Kemendikbudristek. (2021). Kurikulum Untuk Pemulihan Pembelajaran. Jakarta: Kemendikbudristek

Kemendikbudristek. (2022). Panduan pembelajaran dan asesmen pendidikan anak usia dini, pendidikan dasar, dan menengah. Jakarta: Kemendikbudristek

Lestari, H., & Kuryani, T. (2023). Modul Prinsip Pengajaran dan Asesmen. Jakarta: Kemendikbutristek.

Maghfiroh, A. (2024). Peningkatan hasil belajar siswa kelas X pada materi peluang melalui pendekatan teaching at the right level. Jurnal Inovasi Pendidikan Menengah, 4(1), 5–24. https://www.jurnalp4i.com/index.php/secondary/article/view/2798

Mubarokah, S. (2022). Tantangan implementasi pendekatan TaRL (teaching at the right level) dalam literasi dasar yang inklusif di Madrasah Ibtida ′ iyah Lombok Timur. BADA′A: Jurnal Ilmiah Pendidikan Dasar, 4(1), 165–179. https://doi.org/10.37216/badaa.v4i1.582

Nurianti, N., Suhar, & Ndia, L. (2021). Analisis hasil belajar matematika siswa kelas VII SMP negeri 1 Kabangka ditinjau dari jenis kelamin. Jurnal Penelitian Pendidikan Matematika, 9(1), 119–128. https://doi.org/10.36709/jppm.v9i1.16758

Nurzannah, S. (2022). Peran guru dalam pembelajaran. ALACRITY : Journal Of Education, 2(3), 26–34. http://lpppipublishing.com/index.php/alacrity

Pristiwanti, D., Badariah, B., Hidayat, S., & Dewi, R. S. (2022). Pengertian pendidikan. Jurnal Pendidikan Dan Konseling (JPDK), 4(6), 7911–7915. https://journal.universitaspahlawan.ac.id/index.php/jpdk/article/view/9498

Purwowidodo, A., & Zaini, M. (2023). Teori dan praktik model pembelajaran berdiferensiasi implementasi kurikulum merdeka belajar. Yogyakarta: Penebar Media Pustaka

Rahayu, R., Rosita, R., Rahayuningsih, Y. S., Hernawan, A. H., & Prihantini, P. (2022). Implementasi kurikulum merdeka belajar di sekolah penggerak. Jurnal Basicedu, 6(4), 6313–6319. https://doi.org/10.31004/basicedu.v6i4.3237

Rahman, A. (2023). Meningkatkan hasil belajar shooting bola basket melalui metode pembelajaran teaching at the right level (TaRL) pada siswa kelas X-3 SMAN 3 jombang tahun pelajaran 2022-2023. Journal on Education, 6(1), 2036–2043. https://doi.org/10.31004/joe.v6i1.3186

Rahmawati, E. (2020). Upaya Peningkatan hasil belajar matematika siswa kelas XI IPA SMA negeri 1 Kediri melalui model pembelajaran discovery learning. PTK: Jurnal Tindakan Kelas, 1(1), 48–70. https://doi.org/10.53624/ptk.v1i1.5

Richana, A., & Masithoh, D. (2023). Upaya peningkatan hasil belajar IPA siswa kelas IV melalui pendekatan ekspositori di sekolah dasar. PRIMER: Journal of Primary Education Research, 1(1), 40–46. https://journal.unu-jogja.ac.id/pgsd

Saptariana, M., Wijayaningsih, E., & Saefullah, A. (2023). Penerapan pembelajaran berdiferensiasi menggunakan teaching at the right level pada materi ekskresi kelas X. PREDIKSI (Profesi Pendidikan Indonesia), 3, 39–48. https://jurnal.untirta.ac.id/index.php/prediksi/article/view/21232

Stanislaus, U. (2009). Pedoman Analisis Data dengan SPSS. In Encyclopedia of Social Network Analysis and Mining: Graha Ilmu.

Sugiyono. (2022). Metode penelitian kuantitatif, kualitatif, dan R&D. Bandung: Alfabeta.

Sujana, I. W. C. (2019). Fungsi Dan Tujuan Pendidikan Indonesia. Adi Widya: Jurnal Pendidikan Dasar, 4(1), 29. https://doi.org/10.25078/aw.v4i1.927

Syarifudin, Yulianci, S., Ningsyih, S., Hidayah, M. S., Mariamah, & Irfan. (2022). Pengaruh Pembelajaran dengan Metode Teaching at The Right Level (TaRL) Terhadap Kemampuan Literasi Dasar Siswa. Seminar Nasional Inovasi, 22–27. http://semnas.tsb.ac.id/index.php/prosiding/article/view/147

Widiarti, N. K., Sudarma, I. K., & Tegeh, I. M. (2021). Meningkatkan Hasil Belajar Matematika Kelas V SD Melalui Media Video Pembelajaran. Jurnal Edutech Undiksha, 9(2), 195. https://doi.org/10.23887/jeu.v9i2.38376