Application of The TaRL Approach
to Improve Science Learning Outcomes Students on Ecosystem Materials

Hidayati Norrizqa[1][*] and Sugianoor[2]

[1] Student of PPG Prajabatan,Universitas Lambung Mangkurat, Banjarmasin, Indonesia
[2]Biology Teacher of SMA Negeri 7 Banjarmasin, Banjarmasin, Indonesia
*norrizqah@gmail.com

Abstract
This classroom action research aims to improve student learning outcomes by applying the Teaching at the Right Level (TaRL) concept to the ecosystem concept. TaRL is an approach to learning that aims to ensure that students understand the subject matter being taught. It focuses on identifying students' levels of understanding and aligning them with the appropriate level of learning. The research method uses descriptive language with two cycles. Data analysis techniques use qualitative and quantitative analysis. Each cycle consists of planning, implementation, observation, and reflection. The subjects of this research were 40 class XD students at SMAN 7 Banjarmasin for the 2022–2023 academic year. The learning process in TaRL groups students into three categories, namely students with intermediate, above, and below-average levels. Material and problems are given according to their level of learning, but still with the same learning objectives and outcomes. Student learning outcomes in learning activities increased from pre-cycle, showing a classical completeness of 32.5%; cycle I showed a classical completeness of 62.5%; and cycle II had reached the success indicator with a classical completeness of 87.5%. Research using the TaRL approach has improved the science learning outcomes of class XD students at SMA Negeri 7 Banjarmasin.
Keywords: learning achievement; learning outcomes; student performance; TaRL

INTRODUCTION
The COVID-19 pandemic has paralyzed various sectors, including education. This, of course, has an impact on the quality of education. Improving the quality of education is a development target in national education and is an integral part of efforts to improve the overall quality of the people (Sari, 2019). The government's commitment to addressing this issue is evident through the implementation of new policies about the curriculum. The curriculum is a set of learning experiences designed for students to achieve educational goals. The existence of the COVID-19 pandemic that hit Indonesia made educators make adjustments to the curriculum implemented (Munir et al., 2021).

The concept of Independent Curriculum Learning is the formation of independence in thinking. The teacher determines freedom of thought. This means that the teacher is the main milestone in supporting success in learning. In the process, teachers integrate students' literacy skills, knowledge, skills, attitudes, and mastery of technology (Nasution et al., 2023). An independent curriculum is a curriculum that gives teachers the freedom to

design learning according to the needs and characteristics of their students. The independent learning curriculum emphasizes providing freedom in education (Faiz & Kurniawaty, 2020). This curriculum focuses on student-centered learning, so students are fully involved in teaching and learning.

The TaRL (Teaching at the Right Level) approach based on LMS PPG Pre-Service 2022 is an approach that makes students not tied to class level but adjusted based on the abilities of the same students. The student's learning process will be structured, referring to the learning achievements with learning principles that are adjusted to the student's level of achievement (needs, speed, and learning style) according to the child's developmental phase. According to Banerji & Chavan (2020), this TaRL approach is also one of the most effective. Effective for improving children's learning. So, this approach allows students to be taught content based on their ability and mastery of prerequisite material so that students can understand that learning takes place continuously.

Science Learning in the Independent Curriculum for SMA Class In the previous curriculum, science subjects were separated into physics, chemistry, and biology. Schools are given the freedom to choose how to condition these subjects. SMA Negeri 7 Banjarmasin chose to teach science and social studies content in parallel with separate lesson hours (JP) between one subject and another. In line with the new curriculum's expectations, science learning aims to sharpen critical thinking to prepare students to become strong problem solvers, mature decision-makers, and people who never stop learning (Norrizqa, 2021).

Science learning outcomes are achieved through engagement in activities within the natural sciences, wherein students transform their mastery of various knowledge, attitudes, and skills, which may vary from one student to another (Suwartiningsih, 2021). The learning outcomes in the independent curriculum are holistic, meaning that cognitive, affective, and psychomotor are not separate but are a unified whole. Learning outcomes serve as a broad description of students' progress after undergoing a series of learning processes.

Based on the results of previous teaching carried out in guided teaching practice and independent teaching at PPL 1 PPG Pre-Service using the tutor teaching module, which uses a scientific approach at SMA Negeri 7 Banjarmasin class. This is still low; as proven by 40 students, 25 people have not completed the completion criteria set by the school. When group learning is structured heterogeneously, those with high abilities tend to dominate, while students with medium to low abilities are seen as passive. This affects their learning outcomes; those with high abilities actually get high grades, while those in the lower middle class get low grades.

Discrepancies in learning outcomes that are found become material for reflection, and then a follow-up action plan is prepared. The next step that the author took to overcome this problem was to apply the TaRL approach. The new learning paradigm allows educators to formulate learning and assessment plans according to the characteristics and needs of students. Planning and implementing intracurricular learning and assessment in new paradigm learning using the TaRL approach has at least seven components that need to be considered, namely analyzing learning achievements and preparing learning objectives and learning objective flow, planning and implementing diagnostic assessments, developing teaching modules, adapting learning to the stages of achievement and characteristics of students, planning, implementing, and processing formative and summative assessments, reporting learning outcomes, and evaluating learning and assessments (Kemendikbudristek, 2021). The problems above motivated researchers to apply the TaRL approach to improve student learning outcomes, titled "Application of the TaRL Approach to Improve Science Learning Outcomes of Class X Students of SMA

Negeri 7 Banjarmasin on Ecosystem Materials". This research aims to improve student learning outcomes by applying the TaRL concept to the ecosystem concept.

METHOD

The type of research used in this study is classroom action research. Researchers conduct classroom action research to solve learning problems and improve the quality and results of learning by applying new things during the learning process (Anggriani et al., 2023). Classroom action research consists of two cycles, each consisting of three components: diagnostic assessment, planning, and implementation (Kemendikbudristek, 2020). The research subjects were class XD students at SMA Negeri 7 Banjarmasin, with 40 students. Research time during independent teaching practice at PPL 2 PPG Pre-service The place of implementation is in class.
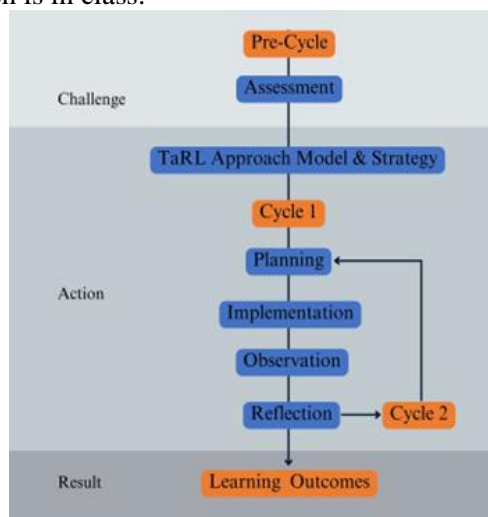

Figure 1 Flow of classroom action research using TaRL approach

Data collection was carried out through formative tests in each cycle by dividing students into three categories: intermediate level, upper level, and below average. The research method uses descriptive language with two cycles. Data analysis techniques use qualitative and quantitative analysis. Qualitative analysis was conducted during the observation of learning with the application of the TaRL approach integrated with ecosystem material. Quantitative data analysis was carried out by comparing student learning outcomes in cycles I and II.

 A. Pre-Cycle

Carried out during guided teaching practice in PPL 2 aims

   1. Carrying out cognitive and non-cognitive diagnostic assessments
   2. Know the characteristics and atmosphere of the class.

   The result of the pre-cycle is to determine the models and strategies for learning that will be implemented using the TaRL approach in independent teaching practice in PPL 2.

 B. Cycle I

   1. Planning includes arranging the learning process according to the results of diagnostic assessments, grouping students based on ability level, and preparing appropriate assessments. The students are grouped into above average, average, and below average categories. Determine the models and strategies for learning that will be implemented using the TaRL approach in independent teaching

practice in PPL 2. As for the value range, group division is based on the following value range criteria:

0–55 has not reached completion; remedial in all parts.

56-70 has not yet reached completion; remedial work is required.

71–85 have reached completion; there is no need for remediation.

86–100 achieve completion and require enrichment challenges.

2. Implementation includes teachers conducting formative assessments periodically to determine student learning progress and make adjustments to learning methods if necessary. At the end of the learning process, teachers can also carry out summative assessments to evaluate the achievement of learning objectives.

3. Observations take place during the implementation process by observers as material for reflection.

4. Reflection: The results of the reflection are in the form of strengths, weaknesses, and solutions to weaknesses in implementation to improve further learning. If there are no deficiencies in the reflection results, all aspects have been implemented, and learning achievement is $\geq 85\%$ of the number of students, then the cycle is stopped.

C. Cycle II

After reflection, the teacher makes improvements based on the results in cycle I, then goes into planning-reflection as in the steps of cycle I.

1. Planning includes preparing the learning process based on the diagnostic assessment results obtained in cycle I, regrouping students based on ability levels, and preparing appropriate assessments. The grouping of students into categories above average, average, and below average. Determine models and strategies for learning that will be implemented with the TaRL approach in independent teaching practice in PPL 2. As for the group division score range with the same score range criteria as cycle I:

0–55 has not reached completion; remedial in all parts.

As it has not yet reached completion, remedial work is required.

71–85 have reached completion; there is no need for remediation.

86–100 achieve completion and require enrichment challenges.

2. Implementation involves the teacher conducting formative assessments at regular intervals to track student learning progress and adjust learning methods if necessary. At the end of the learning process, teachers also conduct summative assessments to evaluate the achievement of learning objectives in ecosystem materials.

3. Observation occurs during the implementation process by the observer as reflection material by comparing cycles I and II results.

4. Reflection: the results of reflection in the form of strengths, weaknesses, and solutions to weaknesses in implementation for improvement in further learning. If, from the results of the reflection, there are no shortcomings, all aspects are carried out, and the achievement of learning $\geqslant 85\%$ of the number of students stops the cycle.

RESULT AND DISCUSSION
Pre-cycle Learning Outcomes
The results of the pre-cycle learning carried out are as follows:

Table 1 Pre-cycle learning outcomes

No.	Completeness	Number of Students	Number of Values	Classical Completeness	Information
1	Complete	13	1000	32.5%	Value >70
2	Not Completed	27	1668	67.5%	Value ≤ 70
Amount		40	2668	100%	
Average			67		

The pre-cycle learning results showed that classical completeness had not reached 85%, so the researchers looked for solutions to improve by applying the TaRL approach in cycle I of guided teaching practice.

Cycle I Learning Results
From the learning results of students in cycle I, the following results were obtained:

Table 2 Cycle I learning outcomes

No.	Completeness	Number of Students	Number of Values	Classical Completeness	Information
1	Complete	25	2005	62.5%	Value >70
2	Not Completed	15	1032	37.5%	Value ≤ 70
Amount		40	40	3037	100%
Average			76		

Based on Table 2, it can be concluded that the learning results of the cycle I show an increase in completeness but still have not reached the classical completeness criteria set, so the researcher continues in the second cycle.

Cycle II Learning Result
Student learning outcomes in cycle 2 are shown in Table 3.

Table 3 Cycle II learning outcomes

No.	Completeness	Number of Students	Number of Values	Classical Completeness	Information
1	Complete	35	2943	87.5%	Value >70
2	Not Completed	5	347	12.5%	Value ≤ 70
Amount		40	40	3290	100%
Average			76		

Based on Table 3, it can be concluded that the learning results of cycle II show an increase in completeness and have reached the classical completeness criteria set so the research was stopped in this cycle.
The stages of the learning cycle are listed in Table 4.

Table 4 Stages of the learning cycle

| Cycle	Planning	Implementation	Observation	Reflection
1	Grouping students and mapping strategies for learning	Conduct learning in accordance with the lesson plan that has been prepared.	Some students still have difficulty understanding ecosystem material.	The teacher conducts further enrichment for students.
2	Grouping students and mapping strategies for learning	Conduct learning according to the revised lesson plan.	The difficulty level of students' understanding decreased.	Students can accept learning using the TaRL approach.
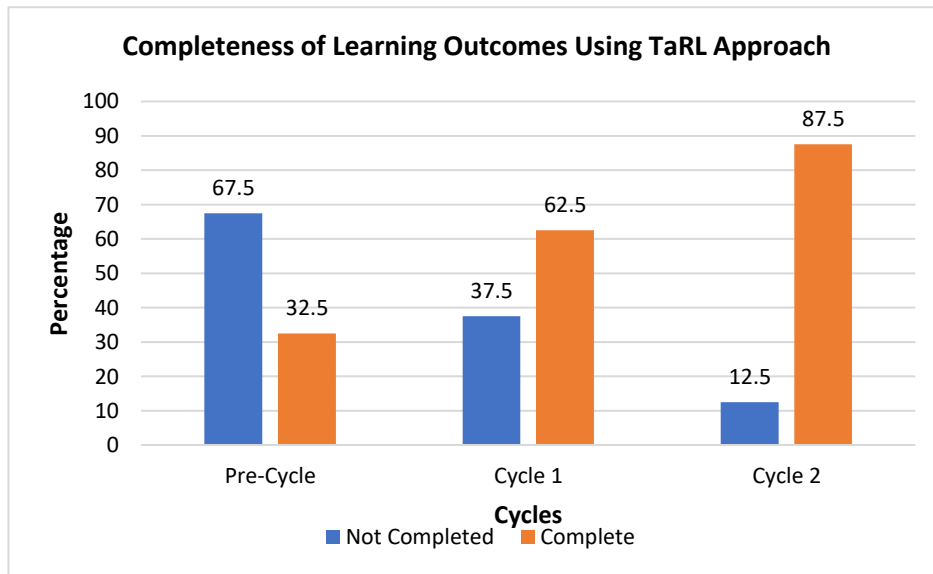
Figure 1 Comparison of the increase in learning completeness between cycles

This research uses a descriptive method with two cycles. The pre-cycle is used as a control without treatment. In the pre-cycle, material on ecosystem components and types of ecosystems is given, while in cycle I, material on energy flows is discussed, cycle II discusses material on chemical cycles, and cycle III discusses energy flows and biogeochemical cycles.

Based on data on learning outcomes in pre-cycle, cycle I, and cycle II on ecosystem material using the TaRL approach, there was an increase in the completeness of learning outcomes, which means the level of achievement of learning objectives was also high. The Criteria for Achievement of Learning Goals set by the school states that the completeness of learning outcomes is in the range of >70 with Categories A (Very Good) and B (Good). This is in line with the Ministry of National Education (2006) statement that learning is said to be complete if, classically, students who get a score of 7 or above reach 85%.

The learning results in cycle I showed an increase in completeness of 30%, but these results had not yet reached the classical completeness criteria set. According to Mubarokah (2022), the cause of the low student learning completeness with the TaRL approach is the lack of maximum teachers in conducting assessments and categorizing students at inappropriate levels so that learning in accordance with their level is not carried out effectively. In addition, according to Attahira et al. (2023), students are still new to the TaRL approach integrated with group learning. It is also because the text that is included in the lesson plan is still relatively difficult for students to understand.

The increase in learning outcomes in each cycle occurs because learners learn according to their ability level so that they have confidence and responsibility in the group because no one has more ability than them, so the group becomes a medium of expression and experience that is very conducive to the development of their abilities. Providing materials and problems that are appropriate to the level of students provides an opportunity for students to improve their performance so that learning objectives can touch the learning outcomes in different ways. This is in line with Banerji & Chavan's (2016) TaRL approach, which is also one of the most effective approaches to improving children's learning. Thus, the success indicator targeted for classical completeness of $\geqslant$ 85% has been achieved, so researchers no longer need to continue in the next cycle.

Improved learning outcomes are obtained from the results of student learning tests in science learning on ecosystem material. The application of TaRL approach has improved the learning outcomes of students from the low category in the pre-cycle with a classical completeness of 32.5%, increasing to the medium category in cycle I with a classical completeness of 62.5%, and then increasing to the high category in cycle II with a classical completeness of 87.5%. This is in line with what was stated by Cahyono (2022): that the TaRL approach is able to improve student learning outcomes. Similar research also found the same thing, namely by Peto (2022), who concluded that implementing the Teaching at the Right Level approach with the categorization of students can improve student learning outcomes.

With the TaRL approach, learning can pay attention to learners' capacity and interest needs. By implementing the TaRL approach, teachers must carry out an initial assessment as a diagnostic test of students to find out the characteristics, needs, and potential of each learner so that teachers know the abilities and initial development of students to be able to implement learning that has been modified (Suharyani et al., 2023). Some findings from previous studies that have the same study on the TaRL approach: (a) Ahyar et al. (2022) found that the TaRL approach can improve the reading ability of elementary school students in early grade elementary reading literacy learning at SDN Inpres Tolotangga; (b) Laksman (2019) reported that the application of TaRL based on ability level, not grade level, as in conventional learning, can improve students' abilities.

CONCLUSION

Based on the results of class action research conducted by applying the TaRL approach to ecosystem material, it can be concluded that there is an increase in student learning outcomes. The learning process in TaRL groups students into three categories, namely students with intermediate, above, and below-average levels. Student learning outcomes in learning activities increased from pre-cycle, showing a classical completeness of 32.5%; cycle I showed a classical completeness of 62.5%; and cycle II had reached the success indicator with a classical completeness of 87.5%. Research using the TaRL approach has improved the science learning outcomes of class XD students at SMA Negeri 7 Banjarmasin.

REFERENCES

Ahyar, Nurhidayah, & 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. doi:https://doi.org/10.54371/jiip.v5i11.1242

Ainun, H. H., Yunus, S. R., & Alim, M. H. (2023). Implementasi pendekatan Teaching at The Right Level (TaRL) terhadap hasil belajar peserta didik smp. *Jurnal Pemikiran dan Pengembangan Pembelajaran*, 5(3), 1070-1075.

Anggriani, S. P., Handayani, B. S., & Hadratullaili, H. (2023). Implementation Teaching at the Right Level (TaRL) approach to improve learning outcomes of x ipa 2 sman 2 labuapi. *Biota: Biologi dan Pendidikan Biologi*, 16(2), 146-155.

Attahira, N., Yunus, S. R., & Nasarullah, N. (2023). Penerapan Pendekatan Teaching at The Right Level (TaRL) untuk meningkatkan motivasi belajar ipa. *Jurnal Pemikiran dan Pengembangan Pembelajaran,* 5(3), 32-38.

Banerji, R., & Chavan, M. (2016). Improving literacy and math instruction at scale in India's primary schools: The case of Pratham's Read India program. *Journal of Educational Change*, 17(4), 453-475. doi:10.1007/s10833-016-9285-5

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 nabati. *Jurnal Pendidikan Tambusai*, 12407-12418.

Faiz, A., & Kurniawaty, I. (2020). Konsep merdeka belajar pendidikan indonesia dalam perspektif filsafat prograsivisme konstruktivisme. *Konstruktivisme: Jurnal Pendidikan dan Pembelajaran*, 12(2), 155-164. doi:https://doi.org/10.35457/konstruk.v12i2.973

Kemendikbud. (2020). Pengajaran yang sesuai dengan capaian dan tingkat kemampuan. Retrieved 06 03, 2023, from Kementrian Pendidikan dan Kebudayaan Republik Indonesia : https://www.ninikpsmalang.net /download/file/2Pengajaran_Yang_Sesuai_Dengan_Capaian_dan_Tingkat_Kemamp uan.pdf

Kemenristekdikbud. (2021). Panduan Pembelajaran dan Asesmen dari Pusat Asesmen dan Pembelajaran. Retrieved from Badan Penelitian dan Pengembangan dan Perbukuan:-https://pusatinformasi.guru.kemdikbud.go.id/hc/enus/articles/141427 35013145-Pengajaran-Sesuai-dengan-Tingkat-Kemampuan-Peserta-Didik

Lakhsman, S. (2019). Improving reading and arithmetic outcomes at scale: Teaching at the Right Level (TaRL), Pratham's approach to teaching and learning. *Revue internationale d'éducation de Sèvres*, 2, 1-5. doi:https://doi.org/10.4000/ries.7470

Muammar, M., Ruqoiyyah, S., & Ningsih, N. S. (2023). Implementing the Teaching at the Right Level (TaRL) approach to improve elementary students' initial reading skills. *Journal of Languages and Language Teaching*, 11(4), 610-625.

Mubarokah, S. (2022). Tantangan implementasi pendekatan TaRL (Teaching at the RightLevel) dalam literasi dasar yang inklusif di madrasah ibtida'iyah lombok timur. *BADA'A: Jurnal Ilmiah Pendidikan Dasar*, 4(1), 54. https://doi.org/10.37216/badaa.v4i1.582

Munir, M., Ikwandi, M. R., & Noor, T. R. (2021). Manajemen kurikulum dalam meningkatkan kualitas pembelajaran pada masa pandemi covid 19. *Jurnal Elkatarie: Jurnal Ilmu Pendidikan dan Sosial*, 4(2), 697-710.

Nasution, A. F., Ningsih, S., Silva, M. F., Suharti, L., & Harahap, J. P. (2023). Konsep dan implementasi kurikulum merdeka. *COMPETITIVE: Journal of Education*, 2(3), 201-211.

Norrziqa, H. (2016). Berpikir kritis dalam pembelaajran ipa. Seminar Nasional Pendidikan IPA, pp. 147-154.

Peto, J. (2022). Melalui Model Teaching At Right Level (TARL) metode pemberian tugas untuk meningkatkan penguatan karakter dan hasil belajar peserta didik pada mata pelajaran bahasa inggris kd. 3.4/4.4 materi narrative text di kelas x. ipk. 3 man 2 kota payakumbuh semester. *Jurnal Pendidikan Tambusai*, 6(2), 12419-12433.

ppg-prajab.simpkb.id. (2023, Mei 30). LMS ppg-prajab. Retrieved from ppg-prajab simpkb: https://bantuan.simpkb.id/books/simlms-pgpinstruktur/ch01/1-1-cara- akses-lms.html

Sari, R. M. (2019). Analisis kebijakan merdeka belaajr sebagai strategi peningkatan mutu pendidikan. *PRODU : Prokurasi Edukasi-Jurnal Manajemen Pendidikan Islam,* 1(1), 38-50.

Suharyani., N. K. A. S., & Farida. H. A. (2023). Impementasi pendekatan Teaching At The Right Level (TaRL) dalam meningkatkan kemampuan literasi numerasi anak. *Jurnal Teknologi Pendidikan*. 8 (2) 470-479.

Suwartiningsih, S. (2021). Penerapan pembelajaran berdiferensiasi untuk meningkatkan hasil belajar siswa pada mata pelajaran ipa pokok bahasan tanah dan keberlangsungan kehidupan di kelas ixb semester genap smpn 4 monta tahun pelajaran 2020/2021. *Jurnal Pendidikan dan Pembelajaran Indonesia (JPPI),* 1(2), 80-94. doi:https://doi.org/10.53299/jppi.v1i2.