EDUMASPUL
JURNAL PENDIDIKAN
Vol. 7 – No. 1, year (2023), page 1364-1372
| ISSN 2548-8201 (Print) | 2580-0469) (Online) |

Team Assisted Individualization and Its Implications for Primary Level Students' Science Understanding

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Receive: 10/01/2023	Accepted: 10/02/2023	Published: 01/03/2023

Abstract

The obstacle faced at this time is that there are still many students who have difficulty in mastering material provided by the teacher in science learning in the classroom. One of the causes students have difficulty understanding learning material is that students less actively involved in learning. Therefore, this study aims to apply the corporative learning model with the TAI or Team Assisted Individualization type in an effort to improve students' understanding of natural science (IPA) materials or subjects. This research was a class action research, where the subject of this research was fifth grade students of SD Negeri 2 Merauke with a total of 32 students in the 2022/2023 school year. The implementation of this research was carried out for approximately two months starting from February to March, where there were 2 research cycles in total. In the process of data collection, this study applied observation and tests in each cycle. As the result, the implementation of science learning in elementary schools by applying one of the cooperative learning models, namely the Team Assisted Individualization type, proves that this model can improve students' understanding of science learning in class V SD Negeri 2 Merauke based on the comparison of learning outcomes in each cycle, where Classical Completeness of cycle I was 69.68% and then increased in cycle II 88.90%.

***Keywords**: TAI, CAR, Elementary Understanding Level, Science*

Introduction

Science or Natural Sciences (IPA) is one of the main subjects in the education curriculum in Indonesia, including at the elementary level (sekolah dasar). Science is the main subject where the topics contain natural knowledge with everything in it (Kim et al., 2021). The purpose of implementing science learning in elementary level (SD) is essentially not only to produce students who are intelligent in understanding science materials (science products, in the form of scientific knowledge) but also skilled in applying scientific steps (science process, or scientific process skills), and able to manifest the character of scientific attitudes (scientific attitudes, or scientific attitude) in their learning activities.

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In achieving the above objectives, students' success in learning science concepts will be more easily realized if students are actively involved directly in the learning process (Repnik et al., 2019). This is also very important to sharpen students' understanding of the concepts of the material being studied (Sanders et al., 2020). In essence, when students learn actively, they develop a great curiosity about something, for example by actively asking questions, finding out, and discussing it with their friends. Therefore, students who are active in learning will more quickly understand the material taught, and what is learned will be more meaningful, and embedded in the minds of students because the knowledge gained is stored longer in memory.

This is contrary to students who only sit, stand still, take notes, and listen to lectures from teachers. The general picture of the learning model used so far is that in the classroom students are relatively calm listening to the teacher teach and students record what the teacher writes and says (Hall et al., 2023). There is no courage for students to ask questions. Students' initiative in answering questions from the teacher is low due to fear and reluctance, so it seems that students feel bored and bored in learning which consequently has an impact on the achievement of student learning outcomes in following lessons to be very low.

Cotic et al., (2020); (Hassan et al., 2021) stated that learning is actually a process to help students to learn well. This definition provides an understanding that the teacher's role is as a facilitator and guide in encouraging students to learn in a cooperative environment. Christy et al., (2019) mentioned Co-operative learning is used to improve academic achievement through group collaboration. Improving relationships between students, developing group problem-solving skills and expanding the democratic process in learning activities.

There are many different types of cooperative learning models, including Team Assisted Individualization (TAI). The TAI type was created as an attempt to design a form of individual teaching that would solve the problem of ineffective individual learning, by having students learn together in groups, be responsible and help each other if they cannot solve problems and encourage others to excel (Nuroh & Mandarani, 2018); (Apriyanto et al., 2018); (Manapa et al., 2018). With the TAI type, students can observe what is happening, how the process is, even what is needed and how the results are. In the teaching and learning process with this type of TAI serves to clarify concepts and understand related to their implementation in everyday life so that students will increasingly understand the material that has been learned (Nuroh & Mandarani, 2018). In conclusion, teaching science with the TAI type is very important. In addition to students having science knowledge, they will also be involved to actively seek and build knowledge and skills so that learning outcomes can be obtained optimally.

Based on pre-survey observations (initial observations) in science learning subjects in class V SD Negeri 2 Merauke, it shows that student activity in learning science is still lacking, thus affecting student learning outcomes. This is because the teacher explains more, lectures, asks and answers and does not provide opportunities for students to develop and discover their own science concepts through various learning activities so that when tests are carried out, most students cannot optimally solve the problems given. This indicates that the level of mastery of student learning material is inadequate. By looking at the teacher's science score document, it is known that 21 students

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(82.94%) have not been able to achieve a score (KKM) > 70. There are only 11 students (37.5%) who are able and even then they are generally at the minimum score limit (Pre-Survey Results, early February 2015). Therefore, student learning outcomes must be further improved. Researchers chose TAI type learning as a study in this research because by conditioning the student learning situation in the form of small groups, it is expected that students will be motivated to participate or be involved in learning activities in their groups, by exchanging opinions, cooperating, and helping each other to jointly achieve high achievement.

Method

This research is an effort to improve learning (research for the improvement of instruction) at the elementary education level. This research uses classroom-based action research. Vhalery & Nofriansyah, (2018) stated that PTK is an effort in the form of actions carried out with planned and systematic procedures to solve learning problems faced by teachers in the classroom. According to Christy et al., (2019) action research is divided into four types, namely, (a) teachers/lecturers as researchers; (b) collaborative action research; (c) simultaneously integrated; and (d) experimental social administration. In this action research, option b is used, where the teacher and students are both researchers and observers, and the lecturer is fully responsible for this research. The main objective of this action research is to improve students' learning understanding assessed by the process and learning outcomes achieved by students in science subjects in Class V SD Negeri 2 Merauke. For this reason, in classroom research, teachers and students act as researchers as well as observers, while lecturers are responsible for the process of formulating planning, action, observation, and reflection.

This research began by analysing the problem situation. The problem situation faced in learning science in Class V SD Negeri 2 Merauke is the lack of student participation in the implementation of the learning process so that it has an impact on the low understanding (learning outcomes) of students. The system of this research model is in the form of a cycle and the implementation of the cycle is a controlled investigation process that is cyclical and self-reflective in nature, which has the aim of making improvements to systems, ways of working, processes, content, or situations. The implementation of this research does not only take place in one action but lasts until the second cycle and the third cycle with an indication of achieving the desired learning objectives. In each cycle there is a dynamic process consisting of four stages, namely: 1) action planning, 2) action implementation, 3) observation and interpretation, followed by analysis and evaluation, and 4) reflection.

Moreover, this classroom action research (CAR) was conducted in SD Negeri 2 Merauke. The research subjects were class V students totaling 32 students in the 2022/2023 academic year. Meanwhile, the research time was carried out from February to March 2023. The material studied is the characteristics of living things (animals). In terms of data collection is done during the research process takes place in the whole cycle. The data collected: (a) science learning process data (which was collected during the implementation of the action) and (b) science learning understanding (which is the result of the implementation of the action). Data collection was carried out using various techniques, namely observation, tests, and documentation. To assess the extent of student

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understanding, which is seen from the learning completeness achieved, meeting KKM > 70 as much as 80% or not.

Findings and Discussion

This research was carried out in 2 cycles with an allocation of 2x40 minutes. Each cycle consists of 2 meetings. Cycle I, meeting 1 was held on Wednesday, 08 February 2023 and meeting 2 was held on Wednesday, 22 February 2023. Cycle II, meeting 1 was held on Wednesday, 08 March 2023 and meeting 2 was held on Wednesday, 15 March 2023. The material studied was about "Characteristics of Living Things." In Cycle I, the planning stage was prepared including syllabus, material studied, lesson plans, learning media, LKS (Student Worksheets), observation guidelines, and learning comprehension assessment instruments with multiple choice tests and essays. In terms of implementation, it followed the steps of implementing the Team Assisted Individualisation type cooperative learning model as stated in the concept in the theoretical study. The observation results showed that: a) some students were not used to learning in groups using the TAI type so that the achievement of results (learning comprehension) had not been met according to the target, b) some students were still afraid and reluctant to express their opinions in front of the teacher and other students, and c) some students were still unable to relate examples of material to real life. The results of the reflection, namely the teacher and researcher: a) re-explain how to apply the TAI type, b) try to be better at motivating students to be active in doing tasks together with their groups and actively asking questions or expressing their opinions, c) make simple examples of daily practice. To be an evaluation material, a test was given at the end of cycle I to determine the extent of mastery / understanding of the material that had been taught and the following results were known as many as 15 students (45.12%) who were still unable to achieve a score (KKM) > 70. There was an increase of 17 students (70.12%) who were able to reach the KKM score and not at the minimum score limit. Therefore, action research needs to be continued to Cycle II.

In this cycle II, the learning tools prepared were the same as those carried out at the planning stage in cycle I, as well as the implementation stage. The results of observation (observation) showed that a) some students were already accustomed to learning in groups using the TAI type. b) some students had begun to be brave and confident in expressing their opinions in front of the teacher and other students, and c) some students were able to explain the relevance of material examples to real life everyday as well as their benefits for other living things. The results of the reflection, namely the teacher & researcher a) Improve the remaining shortcomings in the implementation of the TAI type, b) Maintain student motivation to be enthusiastic in learning, c) Develop material explanations so that they are clearer, concrete / actual, and close to the example and can be observed directly by students. To be an evaluation material, a test was given at the end of cycle II to determine the extent of mastery/understanding of the material that had been taught and the following results are known as many as 7 students (14.20%) who were still unable to achieve a score (KKM) > 70. This number was greatly reduced compared to the pre-survey and Cycle I. There was an increase / increase to 25 students (89.98%) who were able to reach the KKM score and the majority were above the minimum score. The following table 1:

Table 1. Students' Result Comparison

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No.	Cycle Implementation	Total of Students	Percentage	Classical Completeness
1.	First Cycle	15 (NP) and 17 (P)	45.12% (NP) and 70.12% (P)	69.68%
2.	Second Cycle	7 (NP) and 25 (P)	14.20% (NP) and 89.98% (P)	88.90%

Referring to the comparison of student learning from the first cycle to the second cycle, because it can be understood or concluded that the results of classical completeness have met the KKM> 70 as much as 80% as determined, then the implementation of this action research is considered to have reached the target so there is no need to continue to the next cycle.

Discussion

Good school is schools that facilitate students to receive knowledge from teacher and also to be active experimenting trying to find own new knowledge (Manapa et al., 2018); (Kandati & Tatipang, 2021); (Tatipang et al., 2022); (Lengkoan et al., 2022). Results satisfying learning be a measure of success student learning at school. Criteria successful learning is changeable learning students get better from that aspect cognitive, affective, and psychomotor. With eyes science lessons at school, everything skills possessed by students stimulated by the presence of the eye the lesson.

Science learning in elementary schools limited to what happened in everyday life (Apriyanto et al., 2018). Or it can be said that the goal science learning in elementary schools is to grow knowledge and understanding science concepts that will useful and can be applied in everyday life, as well develop skills process to investigate nature around, solve problems and make decision. Objective learning can be achieved by actively involving students in learning science at school. Through science learning at school students can hone skills owned according to the demands current developments including 4C skills, Critical Thinking, Creative, Collaborative, and Communicative (Nuroh & Mandarani, 2018). Thus, the ability of students in science learning is important to master in order to achieve results maximum learning so students able to solve problems relating to the universe in everyday life.

Moreover, one interesting form of learning in an effort to improve student learning outcomes is to apply the Team Assisted Individualization (TAI) cooperative learning model. This Team Assisted Individualization (TAI) model provides opportunities for students to learn independently in solving problems (Apriyanto et al., 2018); (Arifin, 2022); (Silitonga & Wu, 2019). The learning process begins with individual study of the learning material that has been prepared by the previous teacher, then students are given practice questions and work on them independently/individually. Furthermore, individual learning outcomes are brought to groups that have been formed to be discussed and mutually discussed by group members, and all group members are responsible for the overall answer as a shared responsibility.

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However, the obstacle faced at this time is that there are still many students who have difficulty in mastering material provided by the teacher in science learning in the classroom. One of the causes students have difficulty understanding learning material is that students less actively involved in learning (Andarwulan et al., 2021); (Rasmitadila et al., 2021). There are many factors that cause this can occur, including the teacher who is always active in providing material so that it does not provide opportunity for students to discover their own knowledge, not only that, another thing that can influence is the application of method or learning model that is not in accordance with the material that is taught. Therefore, the role of the learning model used learning model used plays an important role to the success of student learning. It takes a learning model that can stimulate students to actively to try and construct their own knowledge. knowledge on their own. One of the learning models learning model that is able to facilitate students to be active is cooperative learning model type team assisted individualization (TAI) (Manapa et al., 2018); (Cotic et al., 2020); (Christy et al., 2019).

The purpose of these activities is to train cooperation in solving problems, reduce selfishness, learn to respect the opinions of friends, train to be responsible in completing tasks. From the application of the Team Assisted Individualization (TAI) model, it is hoped that students can more easily understand the material, if there is material that is difficult to solve together and is expected to improve student learning outcomes both cognitively, affectively and psychomotor. As for student learning outcomes in classroom action research conducted only in the cognitive domain. And the indicators of learning outcomes chosen by researchers are in the realm of creativity (cognitive) which consists of observation, memory, understanding and analysis. This indicator was chosen because it adapts to the material and abilities of students at elementary school age.

Based on the results of observations, the researcher obtained data that students knew about the science material they had studied, but when students were given practice questions they seemed to have difficulty in working on or answering the questions. The constraints experienced by these students were due to students' lack of understanding of the basic concepts as a whole regarding the material they were studying. It can be seen that the condition of the students is less conducive and the learning is not enjoyable so that it makes students less actively involved in learning. This is because the teacher is accustomed to using conventional models such as lectures, questions and answers and exercises or giving assignments in line with (Nuroh & Mandarani, 2018); (Cotic et al., 2020); (Tjabolo & Herwin, 2020). Where the learning process is more focused on the teacher, and does not actively involve students in the learning process, so that the learning outcomes obtained by students are not optimal.

The TAI (Team Assisted Individualization) Cooperative Learning Model is a learning model that prioritizes discussion in groups and does not forget the great benefits of individual assistance (Arifin, 2022). This model tends to give responsibility to students to discuss in groups to understand a material, by not forgetting the teacher's role in accompanying students who do not understand the material. Based on the advantages of the TAI (Team Assisted Individualization) Type Cooperative Learning Model and with the results of the actions that have been taken, it can be concluded that the Application of the TAI (Team Assisted Individualization) Type

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Cooperative Learning Model can improve Student Learning Outcomes in Science Subjects (Vhalery & Nofriansyah, 2018); (Arifin, 2022). The role and activities of the teacher can be increased by using this model, so that the teacher does not only explain material in front of the class but also guides and accompanies students in groups. The role of each group member and teacher greatly influences student learning outcomes, because students who already understand the learning material help other students who do not understand the material so that their learning outcomes can increase. (Manapa et al., 2018); (Arifin, 2022) mentioned that the principle of the TAI (Team Assisted Individualization) Type Cooperative Learning Model is a model in which smart students help students who are lacking.

The successful achievement of learning objectives is highly dependent on the success of the synergy of various components of educational support, both in the form of: a) the selection of the right learning model; b) the readiness of the necessary learning tools such as syllabus, material studied, lesson plans, LKS (Student Worksheets); c) the availability of indispensable learning media and the completeness of school facilities provided by the school; and d) accuracy in choosing and compiling learning implementation assessment tools such as observation guidelines, and assessment instruments for understanding science learning outcomes, in this case using multiple choice & essay tests. From these components, a very important factor that plays a role in supporting the success of this learning activity is the great desire and motivation of teachers and students to learn more deeply how to apply the cooperative learning model of Team Assisted Individualization type as the concept, because previously delivered teachers and students were surprised, confused, and not used to using this type of learning, they still consider something new, so they need to give repeated examples.

Based on the research findings, it is known that the problems that arose during the implementation of the Team Assisted Individualization type cooperative learning model were about: a) Teachers and students were not used to using this TAI type, b) some students were still afraid and reluctant to express their opinions in front of the teacher and other students, and c) some students were still unable to relate the material examples to real life. After some improvements were made, the problems that arose could be minimised. In a logical-rational view, why the application of the TAI type cooperative learning model in science learning in elementary schools is able to overcome some of these problems so that it finally has a positive impact on increasing students' understanding of learning in science lessons is because in essence science teaching objectives target 3 aspects, namely: a) understanding of concepts (scientific knowledge), b) skilful application of science steps (scienific process skills), and c) fostering the character of scientific attitudes (scientific attitudes, or scienific attitute) in students' learning activities. When students learn with the TAI cooperative learning model, students are conditioned to learn actively in small groups formed by the teacher. In such a situation, they are required to actively ask each other questions, discuss with each other, and be enthusiastic and enthusiastic to find out the answers to the problems they face.

As the main characteristic of cooperative learning is that students teach each other, which means that it emphasizes learning together, helping each other in learning and ensuring that everyone in the group achieves the predetermined goals or tasks, then in the group learning process, students are

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indirectly trained to learn how to cooperate among different friends, learn to develop social values and democratic attitudes in learning together, solidarity, responsibility, and help in solving problems and encouraging their friends who are having difficulty in learning in line with (Andarwulan et al., 2021); (Rasmitadila et al., 2021); (Silitonga & Wu, 2019); (Arifin, 2022). The learning process is not only aimed at changing the behaviour of learners from the cognitive domain (providing information) or skills, but also to develop attitudes and behaviours such as respecting the opinions of friends, learning from each other, taking responsibility, sharing knowledge, and being able to work together with a team, so that it can lead to harmonious relationships with friends. Because of this direct experience process, the material learned together becomes firmly embedded in their minds and finally students more easily understand the material taught, and what is learned becomes a meaningful experience for them. This learning pattern is in line with the spirit of learning students where learning rests on student activity and creativity, in the sense that the learning pattern is centred on the students themselves (student centred). The above essence, in accordance with the opinion of Fathurrohman (2015: 16) which states that learning is a process to help students to learn well. In this case, the teacher really carries out his role only as a facilitator and guide for students.

Additionally, with student learning outcomes in cycle II obtained with a completeness percentage value of 88.90% where the value has exceeded the success percentage value of 70%, the cycle stops in cycle II and it is stated that the application of the TAI (Team Assisted Individualization) Type Cooperative Learning Model has succeeded in increasing results student learning in class V Science subjects at SD Negeri 2 Merauke.

Conclusion

Based on the findings and description above, it can be concluded that the implementation of science learning in elementary schools by applying one of the cooperative learning models, namely the Team Assisted Individualization type, proves that this model can improve students' understanding of science learning in class V SD Negeri 2 Merauke based on the comparison of learning outcomes in each cycle. It is also evident that in quantity, students' learning scores are increasing where the learning outcomes of each student can be seen in each cycle. In addition, the accompanying impact is also formed where students feel not only benefit academically but also non-academically, namely learning how to learn in groups and getting the pleasure of learning in groups.

References

Andarwulan, T., Fajri, T. A. Al, & Damayanti, G. (2021). Elementary Teachers' Readiness toward the Online Learning Policy in the New Normal Era during COVID-19. *International Journal of Instruction*, *14*(3), 771–786. https://doi.org/10.29333/iji.2021.14345a

Apriyanto, B., Ikhsan, F. A., Nurdin, E. A., & Kurnianto, F. A. (2018). The Influence of Team Assisted Individualization (TAI) on Geography Learning Model Team of Junior High School. *Geosfera Indonesia*, *2*(1), 83. https://doi.org/10.19184/GEOSI.V2I1.7529

Arifin, K. (2022). Cooperative Learning on The Academic Achievement of Middle-School Students Based on Learning Style. *ETDC: Indonesian*

Copyright © 2023 Edumaspul - Jurnal Pendidikan (ISSN 2548-8201 (cetak); (ISSN 2580-0469 (online)

Journal of Research and Educational Review , *1*(2), 112–121. https://doi.org/10.51574/IJRER.V1I2.175

Christy, L., Kinasih, R., Fatimah, D., & Julianti, V. (2019). Modifikasi Model Pembelajaran Team Assisted Individualization Dengan Strategi Pembelajaran Tugas dan Paksa. *Prosiding Seminar Nasional Pendidikan KALUNI*, *2*(0), 184–194. https://doi.org/10.30998/PROKALUNI.V2I0.58

Cotic, N., Plazar, J., Istenic Starcic, A., & Zuljan, D. (2020). The Effect of Outdoor Lessons in Natural Sciences on Students' Knowledge, through Tablets and Experiential Learning. *Journal of Baltic Science Education*, *19*(5), 747–763. https://doi.org/10.33225/jbse/20.19.747

Hall, C., Dahl-Leonard, K., Cho, E., Solari, E. J., Capin, P., Conner, C. L., Henry, A. R., Cook, L., Hayes, L., Vargas, I., Richmond, C. L., & Kehoe, K. F. (2023). Forty Years of Reading Intervention Research for Elementary Students with or at Risk for Dyslexia: A Systematic Review and Meta-Analysis. *Reading Research Quarterly*, *58*(2), 285–312. https://doi.org/10.1002/RRQ.477

Hassan, M. A., Habiba, U., Majeed, F., & Shoaib, M. (2021). Adaptive gamification in e-learning based on students' learning styles. *Interactive Learning Environments*, *29*(4), 545–565. https://doi.org/10.1080/10494820.2019.1588745

Kandati, S. P., & Tatipang, D. P. (2021). The Effect of Virtual Teaching on Attitudes of Second Language Acquisition During Covid-19 CONDITIONS OF INDONESIAN STUDENTS. *Journal of English Culture, Language, Literature and Education*, *9*(2), 117–127. https://doi.org/10.53682/ECLUE.V9I2.2217

Kim, J. S., Burkhauser, M. A., Mesite, L. M., Asher, C. A., Relyea, J. E., Fitzgerald, J., & Elmore, J. (2021). Improving reading comprehension, science domain knowledge, and reading engagement through a first-grade content literacy intervention. *Journal of Educational Psychology*, *113*(1), 3–26. https://doi.org/10.1037/EDU0000465

Lengkoan, F., Andries, F. A., & Tatipang, D. P. (2022). A Study on Listening Problems Faced By Students of Higher Education. *Globish: An English-Indonesian Journal for English, Education, and Culture*, *11*(1), 41–50. https://doi.org/10.31000/GLOBISH.V11I1.5106

Manapa, I. Y. H., Budiyono, & Subanti, S. (2018). The experiment of cooperative learning model type team assisted individualization (TAI) on three-dimensional space subject viewed from spatial intelligence. *Journal of Physics: Conference Series*, *983*(1). https://doi.org/10.1088/1742-6596/983/1/012136

Nuroh, E. Z., & Mandarani, V. (2018). The Use of Cooperative Learning Through Tai (Team Assisted Individualization) In Reading Comprehension. *Script Journal: Journal of Linguistic and English Teaching*, *3*(1), 14. https://doi.org/10.24903/SJ.V3I1.148

Rasmitadila, Humaira, M. A., Rachmadtullah, R., Sesrita, A., Laeli, S., Muhdiyati, I., & Firmansyah, W. (2021). Teacher Perceptions of University Mentoring Programs Planning for Inclusive Elementary Schools: A Case Study in Indonesia.

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International Journal of Special Education, *36*(2), 53–65. https://doi.org/10.52291/IJSE.2021.36.18

Repnik, R., Arcet, R., & Karasel, N. (2019). Education of Teachers in the Field of Teaching Natural Science Is Lagging behind the Requirements of the Inclusion of Pupils with Special Needs. *Https://Doi.Org/10.1080/1034912X.2019.1642456*, *66*(6), 565–576. https://doi.org/10.1080/1034912X.2019.1642456

Sanders, S., Losinski, M., Ennis, R. P., Lane, J., White, W., & Teagarden, J. (2020). Use of Self-Regulated Strategy Development to Improve Comprehension of Elementary Students with and At-Risk for E/BD. *Education and Treatment of Children*, *43*(1), 21–33. https://doi.org/10.1007/S43494-020-00003-5/METRICS

Silitonga, L. M., & Wu, T. T. (2019). Increasing Students' Interest and Learning Achievement Using Cooperative Learning (Students Team Achievement Division) Through Edmodo. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *11937 LNCS*, 3–13. https://doi.org/10.1007/978-3-030-35343-8_1

Tatipang, D. P., Manuas, M. J., Wuntu, C. N., Rorintulus, O. A., & Lengkoan, F. (2022). EFL Students' Perceptions of the Effective English Teacher Characteristics. *Jurnal Pendidikan Bahasa Inggris Undiksha*, *10*(1), 23–30. https://doi.org/10.23887/jpbi.v10i1.4

Tjabolo, S. A., & Herwin. (2020). The Influence of Teacher Certification on the Performance of Elementary School Teachers in Gorontalo Province, Indonesia. *International Journal of Instruction*, *13*(4), 347–360. https://doi.org/10.29333/iji.2020.13422a

Vhalery, R., & Nofriansyah, -. (2018). Cooperative Learning in the Learning Activity of Students. *International Journal of Scientific and Research Publications (IJSRP)*, *8*(9). https://doi.org/10.29322/IJSRP.8.9.2018.P8110

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