Journal of Educational Science and Technology
Volume 6 Number 3 December 2020 page 324-331
p-ISSN:2460-1497 and e-ISSN: 2477-3840
DOI: https://doi.org/10.26858/est.v6i3.14456

Comparison of Mathematics Learning Outcomes of Students in Auditory Intellectually Repetition (AIR) and Reciprocal Teaching (RT) Learning Models

Sufri Mashuri[1], Jahring[2], Nasruddin[3], Hasan Djidu[4]
[1]Mathematics education, Universitas Sembilanbelas November Kolaka, Indonesia
Email : sufri13@gmail.com
[2]Mathematics education, Universitas Sembilanbelas November Kolaka, Indonesia
Email: jahring@usn.ac.id
[3]Mathematics education, Universitas Sembilanbelas November Kolaka, Indonesia
Email: nash.matematika@gmail.com
[4]Mathematics education, Universitas Sembilanbelas November Kolaka, Indonesia
Email: hasandjidu@usn.ac.id

(***Received***: 21-07-2020; ***Reviewed:*** 30-10-2020; ***Accepted:*** 30-11-2020;
Available online: 19-12-2020; ***Published:*** 20-12-2020)

Abstract. This study aims at discovering the difference of the average increase of mathematics learning outcomes of students in the Auditory, Intellectually, Repetition (AIR) and Reciprocal Teaching (RT) learning models. In this study, the samples were 25 students as the first experimental class and 23 students as the second experiment class. This study employed an experimental research with a nonequivalent control group design. The data analysis used was descriptive and inferential analysis. The results of the descriptive analysis showed that the average pretest score of the first experimental class was 51.64, and the posttest was 70.88. The result showed there was an increase in mathematics learning outcomes of students reaching 0.39. Meanwhile, the average pretest score of the second experimental class was 36.52, and the posttest was 70.48. The result showed there was an increase in mathematics learning outcomes of students reaching 0.51. The variance of the increase in learning outcomes of mathematics in the first experimental class was 0.02, and the second experimental class was 0.01. The results obtained indicated that the increase in mathematics learning outcomes of students through the RT learning model is higher than the increase in mathematics learning outcomes of students using the AIR learning model.

Keywords: auditory intellectually repetition, reciprocal teaching, learning outcomes

INTRODUCTION

The success of the implementation of education is a universal goal that every country in the world wants to achieve. It is, of course, very rational considering education will affect the quality of a nation's human resources in the coming years. One indicator of the success of this education can be identified from learning outcomes of student (Nasruddin et al., 2020; Retnawati, Hadi, et al., 2019; Sejati et al., 2019; Sukariasih et al., 2019) which can be in the form of achievement, or mastery of various skills needed in the 21st century like the ability to think (Jailani et al., 2018), character, communication skills, literacy, collaboration, and various other skills as detailed by Bialik et al (2015).

Efforts to improve and increase student learning outcomes are carried out in various ways, for example, changes in educational policies like the implementation of national examinations (Retnawati, Hadi, et al., 2019; Retnawati, Hadi, Nugraha, Arlinwibowo, et al., 2017), strengthening educational orientation in various aspects like reasoning skills (Retnawati et al., 2018), character strengthening (Djidu &

Retnawati, 2018; Harun, 2013), and most recently literacy strengthening (Jailani et al., 2020) continuing to be evaluated from year to year at the education unit level through learning outcomes reports (Retnawati, Hadi, Nugraha, Ramadhan, et al., 2017) and through evaluation on a national scale.

Student learning outcomes are influenced by several factors. Those are internal factors (coming from within the student) and external factors (coming from outside the student or their environment) (Fitriana & Ismah, 2016; Jahring & Chairuddin, 2019). These two factors have a considerable contribution to the achievement of student learning outcomes, so that improvement efforts is usually related to these internal or external factors.

Researchers and academics in the field of education have produced various efforts by designing various interventions/treatments to design a learning environment maximizing student learning outcomes. Various research results provide empirical evidence regarding the effect of interventions provided, like the use of media, or the application of various learning methods/ models on learning outcomes (Djidu & Jailani, 2016, 2018; Jahring & Marniati, 2020; Mashuri et al., 2019 ; Nasruddin et al., 2019, 2020; Nasruddin & Jahring, 2019; Retnawati, Apino, et al., 2019; Sejati et al., 2020, 2017, 2016a, 2016b). The appropriate learning model is a solution to increase an interaction and a student learning outcomes equipped with a fundamental learning theory (Harianto et al., 2019; Sukariasih et al., 2019). The selection of this learning model must be in accordance with the students' characteristics. It is because the accuracy in selecting a learning model can improve learning outcomes of mathematics (Jahring & Chairuddin, 2019).

In this study, The researchers compared two learning models: Reciprocal Teaching (RT) and Auditory, Intellectually, Repetition (AIR). The RT learning model is a constructivist learning model based on the principles of generating questions, teaching metacognitive skills through teaching, and modeling (Nasruddin & Jahring, 2019). Learning activities in the RT model aim at improving reading skills of low abilities students. Students are given the role of delivering material to their friends by implementing four strategies: question generating, predicting, clarifying, and summarizing (Muslimin et al., 2017; Palincsar & Brown, 1984; Rosenshine & Meister, 1994). Meanwhile, in the AIR learning model, the term auditory (emphasizing on listening, speaking, presentation, argumentation, opinion, and response), intellectually (emphasizing on learning activities on learning experiences and attempting to create relationships of meaning, plan and value from these experiences), and repetition (emphasizing learning activities through repetition with the aim of deepening and broadening understanding) (Elinawati et al., 2018; Mustika & Kinanti, 2018; Ulva & Suri, 2019). The AIR learning model also provides opportunities for students to learn actively, independently, and creatively (Rahayuningsih, 2017). Both of these models.

Both RT and AIR learning models aim at optimizing student learning outcomes through a series of learning activities designed in both models. Several publications of the previous studies results in the form of classroom action research, experiments, and literature study show that the RT learning model causes a positive effect on student learning outcomes (Gorgen, 2015; Nasruddin & Jahring, 2019; Takala, 2006; Tarchi & Pinto, 2016). Likewise, research results related to the AIR learning model also demonstrate its effectiveness on student learning outcomes (Fitriana & Ismah, 2016; Nurhusain & Nurhaeni, 2016).

Based on some of the aforementioned research results, it is explained that both the RT and AIR models cause a positive effect on student learning outcomes. However, research that presents how the two models are compared in terms of student learning outcomes is still extremely rare, especially, if it is related to the context in which this research was conducted. Susanto (2019) has made a comparison of these two models, but he limits his research to a review of students' conceptual understanding. In this study, Susanto (2019) also explained that further research needs to be done to compare these two models on other mathematical material. Fitriana & Ismah (2016) compared mathematics learning outcomes of students based on the student discipline aspect in the AIR learning model and conventional learning model showing the result was more outstanding in the AIR learning model than conventional learning model. The same research was conducted by Nurhusain and Nurhaeni (2016) by comparing mathematics learning outcomes of students in the AIR learning model and Direct Learning (DL) learning model showing that mathematics learning outcomes of students were higher in the AIR learning model compared to DL learning model.

Based on the description above, the researchers performed comparisons of the two learning models (RT and AIR) in this study with the aim of knowing which learning model had the significant effect on student learning outcomes. On the basis of the results of this study, teachers can adopt one of these two learning models (RT or AIR) as an alternative to the innovative learning model used in the learning process in the classroom.

The experimentation of the two learning models carried out in this study was also based on the fact that the researchers found in one school in Kolaka Regency, which is SMP Negeri 3 Wundulako. Student learning outcomes are still relatively low, with an average of 67.28. The average learning outcomes have not yet reached the minimum completeness criteria set by the school. With the implementation of this research, it is expected that it will become a reference for teachers to determine the most effective learning model and in accordance with the criteria of students at SMP Negeri 3 Wundulako.

METHOD

This study employed an experimental research with a nonequivalent control group design (Creswell, 2012, 2014). The research design can be seen in Table 1. This research was conducted by comparing mathematics learning outcomes of students in the RT and AIR learning models. The sample consists of two different classes. The first class applied the AIR learning model, and the second class applied the RT learning model.

Table 1. Research Design

Group	Pretest	Treatment	Posttest
Experiment 1 (E1)	O1	X1	O3
Experiment 2 (E2)	O2	X2	O4

In this study, the population was all students of class IX at SMP Negeri 3 Wundulako consisting of two parallel classes with a total of 47 students. The sampling technique employed was purposive sampling, which is a sampling technique with specific considerations or objectives (Arikunto, 2012; Haryati, 2015; and Sugiyono, 2017). Based on the sampling technique, it was obtained class IXA as the first experimental class with a total of 25 students, and class IXB as the second experimental class with 23 students.

The instrument employed was the test questions of learning outcome of math students given to each class before and after the implementation of the AIR and RT learning models. Furthermore, student learning outcomes data were analyzed descriptively and inferential. Descriptive analysis includes mean, variance, standard deviation, and the N-Gain index. Inferential analysis includes hypothesis testing (t-test) with the criteria rejecting H0 if the value of sig. (2-tailed) $<\alpha = 0.05$. However, hypothesis testing is carried out if it meets the requirements for normal distribution and homogeneity. Therefore, first the data normality test was carried out using the Kolmogorov-Smirnov test, and the homogeneity test using the SPSS-assisted Levene test (Pratiwi, 2014; Sugiono 2017).

RESUTS AND DISCUSSIONS

Results

Data of mathematics learning outcomes of students of class IX at SMP Negeri 3 Wundulako were obtained from the pretest, posttest, and N-Gain results of learning mathematics from the first experimental class and the second experiment class. The description of the data of mathematics learning outcomes of students can be seen in Table 2.

Table 2. Description of Mathematics Learning Outcomes of Students

Statistics	The First Experiment Class			The Second Experiment Class		
	Pretest	*Posttest*	*N-Gain*	*Pretest*	*Posttest*	*N-Gain*
N	25	25	25	23	23	23
Mean	51.64	70.88	0.39	36.52	70.48	0.51
Standard Deviation	9.98	7.07	0.15	16.88	4.44	0.12
Variance	99.60	49.98	0.02	284.93	19.71	0.01
Minimum	38	63	0.12	13	60	0.21
Maximum	74	82	0.65	75	85	0.75

Furthermore, the increase in mathematics learning outcomes of students is calculated based on the N-Gain index formula. The results of the N-Gain index calculation can be seen in Table 3.

Table 3. Calculation of the N-Gain Index

	The Experiment Class	
	First	Second
N-Gain index	0.39	0.51
The Increase	39%	51%

The results of the N-Gain index data normality test using the Kolmogorov-Smirnov test for both classes can be seen in Table 4. Based on Table 4, it can be seen that in the first experimental class, the value of Asymp. *Sig.* (*2-tailed*) = 0,567 > α = 0,05, and in the second experimental class, the value of Asymp. *Sig.* (*2-tailed*) = 0,541 > α = 0,05. It means that the research data for the first and second experimental class are normally distributed.

Table 4. The Results of the normality test for the N-Gain index data for Mathematics Learning Outcomes of Students

		Experiment 1 (E1)	Experiment 2 (E1)
N		25	23
Normal Parameters^{a,b}	*Mean*	.3850	.51
	Std. Deviation	.14620	.121
Most Extreme Differences	*Absolute*	.157	.167
	Positive	.157	.122
	Negative	-.101	-.167
Kolmogorov-Smirnov Z		.786	.802
Asymp. Sig. (2-tailed)		.567^{c,d}	.541^{c}

Based on Table 2, it can be seen that the average value of pretest for the first experimental class is 51.64, while the average value of posttest is 70.88. Hence, the N-Gain value is 0.39. Furthermore, the average value of pretest for the second experimental class was 36.52, while the average value of posttest was 70.48. Hence, the N-Gain value was 0.51. In addition, the value of the N-Gain variance coefficient of the second experimental class is lower than that of the first experimental class. It means that the increase in mathematics learning outcomes of students in the RT learning model is better than those in the AIR learning model.

Table 5. Data Homogeneity Test

Levene statistic	df1	df2	Sig.
0.325	1	46	0.572

Furthermore, the data homogeneity test was carried out with the Levene test. The details can be seen in Table 5. Based on Table 5, the value of Sig. obtained = 0.572 > α = 0.05. It shows that the variance in the value of the increase in mathematics learning outcomes of students in the two experimental classes is homogeneous.

Both analysis requirements have been fulfilled; the research data is normally distributed and the variance is homogeneous. Therefore, the hypothesis test is presented in Table 6. Based on Table 6, the value of Sig. obtained *(2-tailed)* = 0.003 < α = 0,05. It shows that there is a difference in the average increase in learning outcomes of mathematics where the increase in mathematics learning outcomes of students in the RT learning model is higher than those in the AIR learning model.

Table 6. Analysis of Research data

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
The increase in learning outcomes of mathematics	-3.168	46	0.003	-0.12330	0.3893	-0.2016	-0.449

Discussion

This study shows that the RT learning model is more effective than the AIR learning model. It can be identified from the increase in mathematics learning outcomes of students of the second experimental class higher than those in the first experimental class.

From the results obtained, it can be identified that the average increase in mathematics learning outcomes of students in both experimental classes is in the medium category. It means that both the AIR and RT learning model can improve mathematics learning outcomes of students.

Reviewing from the teacher's activities in managing the learning process in class, it also looks diverse. It is indicated by the average percentage value of teacher activeness in the learning process in the first experimental class of 76%, while the average percentage value of teacher activeness in managing learning in the second experimental class is 80%.

From this condition, the average value of the percentage of teacher activeness using the RT learning model is more active than the AIR learning model. Even so, the learning process in the experimental class 1 and experiment 2 class is included in the very active category. Therefore, it can be stated that the RT learning model is better than the AIR learning model.

The results of this study enrich the results of previous studies which merely explain the effectiveness of RT learning model compared to conventional learning model (Nasruddin & Jahring, 2019). These results are also in line with the results of research conducted by Susanto (2019). In this study, Susanto (2019) found that the RT learning model is more effective than AIR learning model in terms of understanding mathematical concepts. With the results of this study, the comparison between the RT and AIR learning model is further expanded in the review of mathematics learning outcomes.

Based on the results obtained from the two learning models, both provide good learning outcomes and make students active in the learning process, as has been stated in the results of research and previous studies (for example: Palincsar & Brown, 1984; Rosenshine & Meister, 1994; Takala, 2006; Tarchi & Pinto, 2016). The results of this study indicate that the theory put forward and the research that has been conducted can be concluded that mathematics learning through the two learning models is well applied in class IX at SMP Negeri 3 Wundulako.

The two models that have been experimented with in this study indicate that constructivist learning models prioritizing the active role of students in the learning process are effective on student learning outcomes. It is certainly in line with the results of previous studies which additionally provide an overview of the effectiveness of various student-centered learning models on student learning outcomes in secondary schools.

CONCLUSIONS AND SUGGESTIONS

Based on the results of research and discussion, it was discovered that the average increase in mathematics learning outcomes of students with the AIR learning model was 0.39. While the average increase in mathematics learning outcomes of students with the RT learning model was 0.51. From the results of this increase, it can be concluded that there is a difference in the average increase in mathematics learning outcomes of students, where the increase in mathematics learning outcomes of students in the RT learning model is higher than those in the AIR learning model.

RT learning model should be a reference for educators in an effort to improve mathematics learning outcomes for junior high school students. This research still needs to be further developed by comparing the RT learning model with other cooperative learning models with different learning approaches.

REFERENCES

Bialik, M., Bogan, M., Fadel, C., & Horvathova, M. (2015). Education for the 21 st century: what should students learn. *Center for Curriculum Redesign*, *3*(4), 415–420. www.curriculumredesign.org

Creswell, J. W. (2012). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson Education Inc. https://doi.org/10.1017/CBO9781107415324.004

Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed method approaches* (4th ed.). SAGE Publications Inc.

Djidu, H., & Jailani. (2016). Fostering student's higher-order thinking skill through problem-based learning in calculus. *Proceeding of 3rd International Conference on Research, Implementation and Education of Mathematics and Science*, 127–130. http://seminar.uny.ac.id/icriems/sites/seminar.uny.ac.id.icriems/files/prosiding/ME-19.pdf

Djidu, H., & Jailani, J. (2018). Developing problem based calculus learning model. *Jurnal Kependidikan: Penelitian Inovasi Pembelajaran*, *2*(1), 68–84. https://doi.org/10.21831/jk.v2i1.12689

Djidu, H., & Retnawati, H. (2018). Cultural values-integrated mathematical learning model to develop HOTS and character values. In E. Retnowati, A. Ghufron, Marzuki, Kasiyan, A. C. Pierawan, & Ashadi (Eds.), *Character Education for 21st Century Global Citizens* (pp. 363-370). Routledge. https://doi.org/10.1201/9781315104188-46

Elinawati, W., Duda, H. J., & Julung, H. (2018). Penerapan model pembelajaran auditory intellectually repetition (AIR) terhadap hasil belajar kognitif siswa. *Sainsmat: Jurnal Ilmiah Ilmu Pengetahuan Alam*, *7*(1), 13–24. https://doi.org/10.35580/sainsmat7164722018

Fitriana, M., & Ismah, I. (2016). Pengaruh model pembelajaran auditory intellectually repetition terhadap hasil belajar matematika siswa ditinjau dari kedisiplinan siswa. *FIBONACCI: Jurnal Pendidikan Matematika Dan Matematika*, *2*(1), 59–68. https://doi.org/10.24853/fbc.2.1.59-68

Gorgen, I. (2015). The effect of reciprocal and direct teaching approaches on summarizing skill. *The Anthropologist*, *22*(2), 276–283. https://doi.org/10.1080/09720073.2015.11891878

Harianto, E., Nursalam, L. O., Ikhsan, F. A., Zakaria, Z., Damhuri, D., & Sejati, A. E. (2019). The compatibility of outdoor study application of environmental subject using psychological theories of intelligence and meaningful learning in senior high school. *Geosfera Indonesia*, *4*(2), 201–216. https://doi.org/10.19184/geosi.v4i2.9903

Harun, C. Z. (2013). Manajemen pendidikan karakter. *Jurnal Pendidikan Karakter*, *3*(3), 302–308. https://doi.org/10.21831/jpk.v0i3.2752

Jahring, J., & Chairuddin, C. (2019). Preferensi modalitas belajar mahasiswa angkatan 2016 program studi pendidikan matematika Universitas Sembilanbelas November Kolaka. *Square : Journal of Mathematics and Mathematics Education*, *1*(1), 27–32. https://doi.org/10.21580/square.v1i1.4039

Jahring, J., & Marniati, M. (2020). Efektivitas model pembelajaran inside outside circle (IOC) terhadap hasil belajar matematika siswa SMP. *Jurnal Karya Pendidikan Matematika*, *7*(1), 22–26. https://doi.org/10.26714/jkpm.7.1.2020.22-26

Jailani, J., Heri Retnawati, H. R., Wulandari, N. F., & Djidu, H. (2020). Mathematical literacy proficiency development based on content, context, and process. *Problems of Education in the 21st Century*, *78*(1), 80–101. https://doi.org/10.33225/pec/20.78.80

Jailani, J., Sugiman, S., Retnawati, H., Bukhori, B., Apino, E., Djidu, H., & Arifin, Z.

(2018). *Desain pembelajaran matematika: untuk melatihkan higher order thinking skills* (H. Retnawati (ed.)). UNY Press.

Mashuri, S., Djidu, H., & Ningrum, R. K. (2019). Problem based learning dalam pembelajaran matematika: upaya guru untuk meningkatkan minat dan prestasi belajar siswa. *PYTHAGORAS: Jurnal Pendidikan Matematika*, *14*(2), 112–125. https://doi.org/10.21831/pg.v14i2.25034

Muslimin, M., Indaryanti, I., & Susanti, E. (2017). Pembelajaran matematika dengan model reciprocal teaching untuk melatih kecakapan akademik siswa di kelas VIII SMP. *Jurnal Pendidikan Matematika*, *11*(1). https://doi.org/10.22342/jpm.11.1.3906.1-14

Mustika, H., & Kinanti, N. (2018). Pengaruh penerapan model pembelajaran auditory intellectually repetition (AIR) terhadap kemampuan komunikasi matematika siswa di kelas VIII SMP Negeri 1 Pasir Penyu. *MES: Journal of Mathematics Education and Science*, *3*(2), 153–158. https://doi.org/10.30743/mes.v3i2.495

Nasruddin, N., & Jahring, J. (2019). Efektivitas penerapan model pembelajaran reciprocal teaching dalam meningkatkan kemampuan komunikasi matematis siswa. *Saintifik: Jurnal Matematika, Sains, Dan Pembelajarannya*, *5*(1), 27–35. https://doi.org/10.31605/saintifik.v5i1.195

Nasruddin, N., Mashuri, S., & Jahring, J. (2019). Implementation of team assited individualization instructional strategies supported by Geogebra software to improve mathematical problem solving ability. *Jurnal Pendidikan Progresif*, *9*(1), 16–21. http://jurnal.fkip.unila.ac.id/index.php/jpp/article/view/17910

Nasruddin, N., Mashuri, S., & Nafiah, U. (2020). Peningkatan hasil belajar matematika pada materi segitiga melalui pendekatan penemuan terbimbing Siswa SMP. *Jurnal Penelitian Dan Pengkajian Ilmu Pendidikan: E-Saintika*, *4*(2), 80. https://doi.org/10.36312/e-saintika.v4i2.169

Nurhusain, M., & Nurhaeni. (2016). Komparasi hasil belajar matematika melalui model pembelajaran auditory intellectually repetition (AIR) dan model pembelajaran langsung. *Pedagogy: Jurnal Pendidikan Matematika*, *1*(2), 10–27. https://doi.org/10.30605/pedagogy.v1i2.364

Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, *1*(2), 117–175. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.648.8749&rep=rep1&type=pdf

Rahayuningsih, S. (2017). Penerapan model pembelajaran matematika model auditory intellectually repetition (AIR). *Erudio Journal of Educational Innovation*, *3*(2), 67–83. https://doi.org/10.18551/erudio.3-2.6

Retnawati, H., Apino, E., Djidu, H., Ningrum, W. P., Anazifa, R. D., & Kartianom, K. (2019). Scaffolding for international students in statistics lecture. *Journal of Physics: Conference Series*, *1320*, 012078. https://doi.org/10.1088/1742-6596/1320/1/012078

Retnawati, H., Djidu, H., Kartianom, K., Apino, E., & Anazifa, R. D. (2018). Teachers' knowledge about higher-order thinking skills and its learning strategy. *Problems of Education in the 21st Century*, *76*(2), 215–230. http://oaji.net/articles/2017/457-1524597598.pdf

Retnawati, H., Hadi, S., Munadi, S., Hadiana, D., Muhardis, M., Apino, E., Djidu, H., Rafi, I., Yusron, E., & Rosyada, M. N. (2019). When national examination no longer determining graduation, will students accomplish it seriously? *Indonesian Journal of Educational Assesment*, *2*(2), 40–49. https://doi.org/10.26499/ijea.v2i2.34

Retnawati, H., Hadi, S., Nugraha, A. C., Arlinwibowo, J., Sulistyaningsih, E., Djidu, H., Apino, E., & Iryanti, H. D. (2017). Implementing the computer-based national examination in Indonesian schools: The challenges and strategies. *Problems of Education in the 21st Century*, *75*(6).

Retnawati, H., Hadi, S., Nugraha, A. C., Ramadhan, M. T., Apino, E., Djidu, H., Wulandari, N. F., & Sulistyaningsih, E.

(2017). *Menyusun laporan hasil asesmen pendidikan di sekolah: referensi untuk pendidik, mahasiswa, & praktisi pendidikan*. UNY Press.

Rosenshine, B., & Meister, C. (1994). Reciprocal teaching : A review of the research. *Review of Educational Research*, *64*(4), 479–530. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1001.8883&rep=rep1&type=pdf

Sejati, A. E., Amaluddin, L. O., Hidayati, D. N., Kasmiati, S., Sumarmi, S., & Ruja, I. N. (2017). The effect of outdoor study on the geography scientific paper writing ability to construct student character in senior high school. *Proceedings of the 5th SEA-DR (South East Asia Development Research) International Conference 2017 (SEADRIC 2017)*, 104–108. https://doi.org/10.2991/seadric-17.2017.22

Sejati, A. E., Kasmiati, S., & Ikhsan, F. A. (2019). The relationship between learning process interactions and student's learning outcomes in environmental sustainability matter geography-social science education subject. *IOP Conference Series: Earth and Environmental Science*, *282*(2019), 012026. https://doi.org/10.1088/1755-1315/382/1/012026

Sejati, A. E., Nasarudin, N., & Ikhsan, F. A. (2020). The effect outdoor study to the students activeness in senior high school. *Geographica*, *1*(1), 7–12.

Sejati, A. E., Sumarmi, S., & Ruja, I. N. (2016a). Pengaruh metode pembelajaran outdoor study terhadap kemampuan menulis karya ilmiah geografi untuk meningkatkan karakter cinta lingkungan. *Prosising Nasional Fakultas Ilmu Sosial, Universitas Negeri Malang*.

Sejati, A. E., Sumarmi, S., & Ruja, I. N. (2016b). Pengaruh metode pembelajaran outdoor study terhadap kemampuan menulis karya ilmiah geografi sma. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, *1*(2), 80–86. https://doi.org/10.17977/JP.V1I2.5804

Sukariasih, L., Saputra, I. G. P. E., Ikhsan, F. A., Sejati, A. E., & Nisa, K. (2019). Improving the learning outcomes of knowledge and inquiry skill domain on third grade students of SMP Negeri 14 Kendari through the guided inquiry learning model assisted by science kit. *Geosfera Indonesia*, *4*(2), 175. https://doi.org/10.19184/geosi.v4i2.10097

Susanto, A. (2019). Kemampuan pemahaman konsep matematis, model reciprocal teaching dan model AIR auditory intellectualy repetition. *Matematika Dan Pendidikan Matematika*, *3*(2), 219–230. https://doi.org/10.15548/mej.v3i2.677

Takala, M. (2006). The effects of reciprocal teaching on reading comprehension in mainstream and special (SLI) education. *Scandinavian Journal of Educational Research*, *50*(5), 559–576. https://doi.org/10.1080/00313830600953824

Tarchi, C., & Pinto, G. (2016). Reciprocal teaching: Analyzing interactive dynamics in the co-construction of a text's meaning. *Journal of Educational Research*, *109*(5), 518–530. https://doi.org/10.1080/00220671.2014.992583

Ulva, M., & Suri, I. R. A. (2019). Pengaruh model pembelajaran auditory intellectualy repetition terhadap kemampuan komunikasi matematis peserta didik. *Union: Jurnal Pendidikan Matematika*, *7*(1), 15–21.