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Comparison of Auditory Intellectually Repetition Approach and Student Teams Achievement Division Approach to Mathematics Learning Outcomes of Elementary School Students

Perbandingan Model Auditory Intellectualy Repetition dan Model Student Teams Achievement Division Terhadap Hasil Belajar Matematika Siswa Sekolah Dasar

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Abstract
This study compares the Auditory Intellectually Repetition approach and the Student Teams Achievement Division approach to elementary school mathematics learning outcomes. This type of research is quantitative research. The research design used is the Pretest Posttest Control Group Design. The population in this study were fifth-grade students in Mappkasunggu District, and the samples of this research were fifth-grade students of public elementary school No.106 Inpres Takalar I and fifth-grade students of state elementary school no. 23 Center Takalar I. The data collection technique used was multiple choice questions. The research results based on descriptive analysis showed that the average value of mathematics learning outcomes with the AIR learning approach reached 75.33, and the Student Teams Achievement Division approach reached 60.67. At the same time, the results of the inferential analysis show that the Auditory Intellectually Repetition approach has a more significant effect than the Student Teams Achievement Division approach on student mathematics learning outcomes. The sig value is obtained based on the multivariate test table in the manova test. 0.000 < 0.05.
Keywords: *auditory intellectually repetition; student teams achievement division; mathematics learning outcomes*

Abstrak
Penelitian ini bertujuan untuk mengetahui perbandingan Model Pembelajaran AIR dan Model Pembelajaran STAD terhadap hasil belajar matematika Sekolah Dasar. Jenis penelitian ini adalah penelitian kuantitatif. Design penelitian yang digunakan adalah Pretest Posttest Control Group Design. Populasi dalam penelitian ini adalah siswa kelas V se-gugus I Kecamatan Mappkasunggu. Sampel dalam penelitian ini adalah siswa kelas V SDN

No.106 Inpres Takalar I dan siswa kelas V SDN No. 23 Centre Takalar I. Teknik pengumpulan data yang digunakan adalah pemberian soal pilihan ganda. Hasil penelitian berdasarkan analisi deskriptif menunjukkan bahwa nilai rata-rata hasil belajar matematika dengan model pembelajaran AIR mencapai 75,33 dan model STAD mencapai 60,67. Sedangkan hasil analisis inferensial menunjukkan bahwa model pembelajaran AIR berpengaruh lebih signifikan dibanding model pembelajaran STAD terhadap hasil belajar matematika siswa. Hal ini berdasarkan tabel multivariate test dalam uji manova diperoleh nilai sig. 0,000 < 0,05.

Kata Kunci : *auditory intellectually repetition; student teams achievement division; hasil belajar matematika*

Introduction

Education is one of the essential factors in advancing a country (Widiansyah, 2018). Every country in the world has a different education system. Similar to the state of Indonesia, the direction of education is also aimed at producing human resources who have character and can compete following the times. At the practical level, education has not been implemented properly or following the direction of education policy (Supardi, 2015).

Educating the nation's life is one of the goals and ideals of the Indonesian nation, as stated in the preamble of the 1945 Constitution. In line with this, education should be one of the priorities. To improve the quality of education, especially at the elementary school level, it is necessary to improve the quality of teaching for both students and teachers (Arif, 2013). This can be done by looking for methods or learning strategies suitable for class conditions. Excellent and appropriate learning strategies will improve student learning outcomes. Education occupies a significant position in improving the quality of human resources in terms of mastery of science and technology (Hilmi, 2017). Education is also an effort to accelerate the development of human potential and character to carry out assigned tasks. Education is not only aimed at educating the nation's life but developing the potential of students to become human beings who believe in and fear God Almighty and have a noble character so that qualified human resources are formed in knowledge and faith (Omeri, 2015).

A teacher must have appropriate learning strategies and models to communicate with students. A teacher must also be able to choose and use methods and media as teaching aids (Alwi, 2017). Especially in Mathematics. This condition is ideal with a learning process, especially mathematics learning, which will be more effective and meaningful if a student participates actively. The characteristics that support the learning process are the participation and involvement of students in the learning process. This participation aims for students to participate in the learning process so that it becomes meaningful learning in the learning process (Cristianty, 2021). But with the facts seen, some concepts are interrelated between one concept and another, namely by learning so that learning will become meaningful. This results in the teaching and learning process activities will provide a better response to the learning process (Oktiani, 2017). The word learning is defined as an agent of change in training and attitude skills. This change only lasts for a moment and will return to the original

behaviour even though the student is actively studying what an educator conveys. An educator who is only selfish will result in constrained student learning abilities so that the learning process obtained by students is not optimal for the student (Al-tabany, 2017; Aulia et al., 2021). Another factor was affecting low learning outcomes, especially in mathematics, is learning motivation. A practical and meaningful learning implementation process is if students are motivated to learn so that they actively participate in learning. One of the characteristics of meaningfulness in the teaching and learning process is the involvement or participation of students in the teaching and learning process (Kostiainen, 2018; Syaparuddin et al., 2020).

Empirical facts of Mathematics learning in the field, which are analyzed from various angles, show that Mathematics learning outcomes are not optimal. The causes of students' lack of focus, lack of enthusiasm for learning, often allow when learning takes place, are not on time to collect assignments, interfering with other students while studying, do not participate in group discussions, and cheat when doing individual assignments. Some students' attitudes that are not good show that the attitude of student learning responsibility has not been seen in the students themselves. Efforts to improve a learning implementation process can be made by applying innovative learning models. Several learning methods can be applied by students, especially in the shutter of activity, independence, which can be used by education as future learning materials so that students' learning abilities can be obtained optimally so that students are motivated, one of which is the Auditory Intellectual Repetition learning model (Ridlo, 2021; Syazali et al., 2021).

Pembelajaran Auditory diartikan sebagai sebuah indera pendengaran yang dapat digunakan dalam proses pembelajaran dengan presentase, menyimak, berargumentasi, dan menanggapi. Pembelajaran auditory sebagai upaya yang diharus dimiliki seorang guru, yaitu dengan kita sebagai seorang gueu memberikan rangsangan atau stimulus yang kuat sehingga apa yang ita berikan siswa dapar menyerapnya dengan baik. Karna pada dasarnya keberhasilan seorang siswa ditentukan oleh guru yang pandai dalam memilih metode pembelajaran yang baik kedepannya dari masa ke masa (Humaira, 2012).

By applying the AIR learning model, students participate more actively in learning and often express their ideas. Students have more opportunities to utilize knowledge and skills comprehensively. Students with low abilities can respond to

problems in their way. Students are intrinsically motivated to provide evidence or explanations. Students have a lot of experience in finding something to answer problems (Fitriana & Ismah, 2016).

The Student Teams Achievement Division (STAD) learning approach can also improve student learning outcomes and motivate them to learn. Student Teams Achievement Division learning approach Can improve student learning outcomes, and the scope of improvement can be seen in the quiz scores (Putri & Sutriyono, 2018). Students can motivate themselves in learning because the Student Teams Achievement Division learning approach can increase students' confidence. One of these cooperative learning methods can make students flexible in socializing and improve the relationships of each student in one class. Based on this background, this study was conducted to compare the auditory intellectual repetition model, and the student teams achievement division model on the mathematics learning outcomes of elementary school students.

Method

Method The research method used is the quantitative research method. This type of quasi-experimental research is with Pretest Posttest Control Group Design. The population in this study were fifth-grade students in Mappakasunggu District, taking samples using random sampling techniques. The selected sample is the fifth-grade students of public elementary school No. 23 Center Takalar I, with a total of 30 people, and fifth-grade students at the state elementary school No. 106 Inpres Takalar I, totalled 30 people. Collecting data using observation techniques, questionnaires, tests, and documentation. The collected data will be analyzed descriptively and differentially, including the normality, homogeneity, and hypothesis testing with Manova.

Result

Descriptive Analysis Results

Learning outcomes before the treatment of the Auditory, Intellectual and Repetition (AIR) Learning Model in experimental class I and the Student Teams Achievement Division (STAD) learning model in experimental class II:

Table 1 *Statistics of pre-test learning outcomes assessment scores*

Statistics	Score	
	Experiment I	**Experiment II**
Mean	54,33	52,33
Maximal	80	80
Minimum	30	30
Std. Deviation	14,55	13,57
Varians	211,61	184,02

The following is presented in tabular form regarding the description of learning outcomes after the Auditory, Intellectual and Repetition (AIR) Learning Model treatment in experimental class I and the Student Teams Achievement Division (STAD) learning model in Experimental Class II:

Table 2 *Statistics of learning outcomes assessment scores after treatment*

Statistics	Nilai	
	Experiment I	**Experiment II**
Mean	75,33	60,67
Maximal	100	80
Minimum	50	40
Std. Deviation	15,25	12,02
Varians	232,64	144,39

Normality Test

Table 3 *Learning outcomes of the experimental class before treatment*

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
PreTest_AIR	.152	30	.076	.937	30	.077

Based on the results of the SPSS program output above, it can be shown that the value of sig. Obtained is 0.077 for the Kolmogorov-Smirnov statistic. This value shows that it is greater than the significant level = 0.05 (sig. > 0.05), so it can be concluded that the pre-test scores of the experimental class I learning outcomes are normally distributed.

Table 4 *Learning outcomes of experimental class II before treatment*

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
PreTest_STAD	.152	30	.077	.937	30	.075

Based on the results of the SPSS program output above, it can be shown that the value of sig. Obtained is 0.077 for the Kolmogorov-Smirnov statistic. This value shows that it is greater than the significant level = 0.05 (sig. > 0.05), so it can be concluded that the pre-test value of the experimental class II learning outcomes is normally distributed.

Table 6 *Learning outcomes of experimental class I after treatment*

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
PostTest_AIR	.155	30	.062	.921	30	.029

Based on the results of the SPSS program output above, it can be shown that the value of sig. Obtained is 0.062 for the Kolmogorov-Smirnov statistic. This value shows that it is greater than the significant level = 0.05 (sig. > 0.05), so it can be concluded that the post-test scores of the Experiment I class learning outcomes are normally distributed.

Table 7 *Learning outcomes of experimental class II after treatment*

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
PostTest_STAD	.154	30	.069	.932	30	.056

Based on the results of the SPSS program output above, it can be shown that the value of sig. Obtained is 0.069 for the Kolmogorov-Smirnov statistic. This value shows that it is greater than the significant level = 0.05 (sig. > 0.05), so it can be concluded that the post-test scores of the experimental class II learning outcomes are normally distributed.

Homogeneity Test

Tabel 8 *Homogeneity test of learning motivation for experimental class I and experiment II*

Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
1.847	1	58	.179

Based on the Levene Statistic test in the table above, a significance of 0.179 was obtained. This signature value is more significant than 0.05, so it can be concluded that

the learning motivation data in experimental classes I and II before being given treatment for students came from a homogeneous population.

Table 9 *Test the homogeneity of learning outcomes for experimental class I and experiment II*

Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
3.302	1	58	.074

Based on the Levene Statistic test in the table above, a significance of 0.074 was obtained. This signature value is more significant than 0.05, so it can be concluded that students' data on learning outcomes in experimental class I and experimental class II came from a homogeneous population.

Independen t-test

Table 10 *Independent Samples Test*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Learning outcomes	Equal variances assumed	3.302	.074	-4.137	58	.000	-14.667	3.545	-21.763	-7.571
	Equal variances not assumed			-4.137	54.985	.000	-14.667	3.545	-21.771	-7.562

Based on the test in the independent t-test table above, a significance of 0.000 was obtained. This significance value is smaller than 0.05, so it can be concluded that there are differences in the learning outcomes of students taught using the AIR Learning Model and the learning outcomes of students taught using the Student Teams Achievement Division Learning Model. From the results of the SPSS analysis, there is a

Mean Difference (mean difference) in learning outcomes between the experimental class I and the experimental class II of 14.67.

Discussion

This study aims to compare the Auditory Intellectually And Repetition (AIR) Learning Model and the Student Teams Achievement Division (STAD) Learning Model on Students' Mathematics Learning Outcomes. on the basic competence of Solving problems related to multiplication and division of fractions and decimals. The Auditory Intellectually Repetition (AIR) learning model is a learning model that assumes that learning will be effective if it pays attention to three aspects, namely Auditory, Intellectual, and Repetition. Auditory is learning by speaking, listening, presenting, expressing opinions, and responding. In the auditory aspect, students are trained to speak and express opinions regarding the material being taught. The second aspect, namely Intellectual, is the ability to think (Minds On) which is trained through reasoning, investigating, identifying, finding, creating, solving problems, and applying. The third aspect, namely repetition, means repetition. In the context of learning, repetition is deepening, expanding, and strengthening students by giving assignments or quizzes. Repeated lessons will give clear and easily forgotten responses, so students can easily solve problems. Repetition will positively impact if the repetition is not dull and presented excitingly. Student activity in this aspect is to conclude orally about the material discussed. The Auditory Intellectually Repetition (AIR) learning model can detect and, at the same time, handle students' learning difficulties, either as a whole or individually. Based on the discussion above, the Auditory Intellectually Repetition (AIR) learning model has a significantly better effect than the STAD learning model.

Based on the results of the analysis, the significance value is 0.000 <0.05, which means that there are differences in student learning outcomes using the Auditory Intellectually Repetition (AIR) Learning Model and student learning outcomes using the Student Teams Achievement Division (STAD) Learning Model. In experimental class I, the average value of learning outcomes (post-test) reached 75.33; in experimental class II, the average value of student learning outcomes reached 60.67. The data analysis results show that the average value of learning outcomes (post-test)

in experimental class I is higher than in experimental class II. This means an experimental class I has better learning outcomes than experimental class II.

The findings of this study are that there are differences in learning outcomes between the experimental class I and experimental class II, namely by applying the Auditory Intellectually Repetition (AIR) learning model in the experimental class I while the experimental class II applies the Student Teams Achievement Division (STAD) learning model. The results of the study showed that the Auditory Intellectually Repetition (AIR) learning model was more effective in improving students' mathematics learning outcomes compared to the Student Teams Achievement Division (STAD) learning model.

This study's results align with the opinion (Elisa et al., 2019), which states that through the Auditory Intellectually Repetition (AIR) learning model, students participate more actively in learning and often express their ideas. Students have more opportunities to utilize knowledge and skills comprehensively, Students with low abilities can respond to problems in their way, Students are intrinsically motivated to provide evidence or explanations, and Students have a lot of experience in finding something to answer problems. The results of the research that have been carried out are obtained that during the learning process, students actively participate in the learning process and find solutions to solve or answer a given problem.

Learning using the AIR learning model has three aspects. The first aspect is Auditory, which is learning that can train students' hearing and courage to express opinions. During the learning process, students listen to explanations from the teacher regarding the material being taught and are asked to express opinions related to the material being taught. The material being taught. The second aspect, namely Intellectual, is learning that can train students to solve problems creatively. During the learning process, a problem is given to be solved by students with the knowledge obtained. While the third stage, repetition, is learning, which can train students to recall the material studied. In this aspect, students are expected to be able to recall the material studied by providing an evaluation related to the material that has been taught. These three aspects can make students more active in the learning process and creative in solving a given problem (Kesumawati, 2010; Simamora, 2019).

AIR stands for Auditory, Intellectual and Repetition (Suherman, 2018). Learning like this assumes that it will be effective if you pay attention to these three things. Auditory means that in the learning process, students are expected to be active, especially in listening, speaking, and giving ideas or arguments verbally, Intellectually which means thinking skills need to be trained through reasoning exercises, creating, solving problems, constructing and applying, and repetition which means repetition, so that For a deeper and broader understanding, students need to be trained through problem-solving, assignments or quizzes. This is supported by the results of research (Aprianti & Kesumawati, 2019), which proves that using the AIR learning model in learning that emphasizes repetition aspects in the learning process, makes students remember more about a mathematics subject matter being taught so that students will be interested in solving math problems. . In addition, students are trained to present the results of their group work, this will foster a sense of courage and confidence in students when making presentations so that they can develop mathematical problem-solving skills from the problems given. The same thing was also done (Sopia, 2019) with the research title Application of Auditory, Intellectual, Repetition (AIR) Learning Models on Mathematics Cognitive Learning Outcomes, with research results stating that the application of the Auditory Intellectual Repetition (AIR) learning model can improve students' mathematics learning outcomes.

The multivariate test table has a statistical test, namely Pillai's trace, in the class column. Obtained a significant value of 0.000, where 0.000 <0.05 according to the criteria that H0 is rejected and Ha is accepted, so there are differences in the Auditory, Intellectual, Repetition (AIR) learning model and the Student Team Achievement Divisions (STAD) cooperative learning model on learning outcomes. Students because the AIR learning model can train students to participate more actively in learning and often express their ideas, students have more opportunities to utilize knowledge and skills comprehensively, students with low abilities can respond to problems in their way, students are intrinsically motivated to provide evidence or explanation, and students have a lot of experience to find something in answering the problem. The AIR learning model can also positively impact student learning outcomes. Based on the discussion, the Auditory Intellectual Repetition (AIR) learning model has a significantly better effect on student outcomes than the Student Teams Achievement Division (STAD) learning model.

Conclusion

The AIR learning approach can train students to participate more actively in learning and express their ideas often. Students have more opportunities to utilize knowledge and skills comprehensively, students with low abilities can respond to problems in their way, students are intrinsically motivated to provide evidence or explanations, and students have a lot of experience in finding something to answer problems with the AIR learning approach which can also trigger a positive impact on student learning outcomes. The use of the AIR learning approach has a more significant influence on students' motivation and mathematics learning outcomes than the use of the STAD learning approach on students' mathematics learning outcomes in the classroom.

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