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The Influence of Riko the Series on the Learning Outcomes of the Water Cycle for Elementary School Students

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Abstract: This research aims to determine the impact of the Riko the Series on the learning outcomes of elementary school students in the water cycle material. The learning outcomes referred to in this study pertain to the achievement at the level of conceptual understanding in the cognitive domain. This is a quantitative study with quasi-experimental research as its method. The research utilizes a Nonequivalent Control Group design, involving pretest and posttest assessments in each group, with the population being all fourth-grade students of elementary school of Negeri Sukaraja 1. The sampling technique used is purposive sampling The sample consists of 31 students from Class IV A and 31 students from Class IV B, both from elementary school of Sukaraja 1. The preliminary findings indicate a significant impact on the learning outcomes of elementary school students in the water cycle material, whether or not the Riko the Series is used. Subsequent research findings reveal that the learning approach involving the Riko the Series leads to better learning outcomes, as evidenced by higher average scores. However, when comparing the learning outcomes between the experimental and control groups, no significant impact is found. To measure the influence in more detail, an effect size calculation is performed. The result of the effect size calculation, based on Cohen's D criteria, considering the entire population of fourth-grade students at elementary school of Negeri Sukaraja 1 Sumedang, suggests that the Riko the Series has a low impact on the learning outcomes of elementary school sukaraja 1 Sumedang with an effect size of 0.254.

Keywords: riko the series, elementary school, water cycle

Abstrak: *Penelitian ini bertujuan untuk mengetahui pengaruh Riko the Series terhadap hasil belajar siswa sekolah dasar pada materi siklus air. Hasil belajar yang dimaksud dalam penelitian ini adalah pencapaian pada tingkat pemahaman konsep dalam ranah kognitif. Penelitian ini merupakan penelitian jenis kuantitatif dengan kuasi eksperimen sebagai metode penelitiannya. Dalam penelitian ini, digunakan desain Nonequivalent Control Group, yang melibatkan pengujian pretest sebelum perlakuan dan pengujian posttest setelah perlakuan di setiap kelompok, populasi dalam penelitian ini adalah seluruh siswa kelas IV SD Negeri Sukaraja 1 teknik pengambilan sampel menggunakan purposive sampling dengan sampel 31 siswa kelas IV A SD Negeri Sukaraja 1 dan 31 siswa kelas IV B SD Negeri Sukaraja 1. Hasil penelitian awal menunjukkan adanya pengaruh yang signifikan terhadap hasil belajar siswa sekolah dasar pada materi siklus air, baik saat Riko the Series digunakan maupun tidak. kemudian hasil penelitian lanjutan menemukan bahwa pendekatan pembelajaran yang melibatkan Riko the Series menghasilkan hasil belajar yang lebih baik, seperti terlihat dari nilai rata-rata yang lebih tinggi. Namun, saat perbandingan hasil belajar antara kelas eksperimen dan kelas kontrol dilakukan, tidak ditemukan dampak yang signifikan antara keduanya. Untuk mengukur pengaruh secara lebih terperinci, dilakukan perhitungan effect size. Dari hasil perhitungan effect size ditemukan bahwa berdasarkan kriteria effect size Cohen's D dengan ketentuan bahwa populasi dalam penelitian ini adalah seluruh siswa kelas IV SD Negeri Sukaraja 1 Sumedang. Maka dapat disimpulkan bahwa riko the series berpengaruh rendah terhadap hasil belajar siswa sekolah dasar Negeri Sukaraja 1 Sumedang pada materi siklus air dengan pengaruh sebesar 0,254.*

Kata kunci: *riko the series, sekolah dasar, siklus air*

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▪ INTRODUCTION

Fundamentally, education is highly important due to the knowledge gained, which functions as a fundamental resource for navigating one's life. It is a fundamental human requirement that cannot be neglected, given that it amplifies the capabilities of individuals (Aeni, 2019). The role of education is pivotal in shaping the future generations of a nation as it meets the needs of individuals. As a result, the significance of education for the future of the nation is acknowledged by both the government and society. Achieving a robust nation necessitates the presence of high-quality education (Malihi, Handoyo, & Wagiran, 2023). The statement implies that education is a significant concern for all nations, particularly those in the process of development. As a result, each country formulates its own curriculum and education policies to establish a system that suits its specific requirements.

The curriculum currently used in Indonesia is the 2013 curriculum and the Independence curriculum. In this regard, the government allows schools to choose between these curricula according to their conditions and readiness. However, the government continues to encourage each school to reflect and prepare for the implementation of the Independence curriculum. The 2013 curriculum emphasizes contextual, scientific learning and is oriented towards developing students' competencies, with one of its main features being project-based learning and a scientific approach. Meanwhile, the Independence curriculum emphasizes diverse teaching, focusing on essential materials so that students have sufficient time to understand ideas and strengthen necessary skills. Based on the perceptions of elementary school teachers and prospective elementary school teacher students, it is mentioned that the quality of education in Indonesia, as seen from the curriculum aspect, is categorized as satisfactory (Aeni, 2019)

One change in the Independence curriculum compared to the 2013 curriculum is the merging of the subjects of Natural Sciences and Social Sciences at the elementary school level into a single subject known as Natural and Social Sciences (IPAS). This integration is based on the understanding that elementary school children perceive the world as a whole and integrated, and their thought patterns at this stage are simple and do not focus too much on details. The IPAS subject is crucial because, for elementary school children, understanding phenomena related to the natural and social environment around them is essential. By comprehending natural and social phenomena, it is expected that elementary school children can apply the knowledge and understanding they acquire to their daily activities. In line with the concept of the Independence curriculum, which focuses on essential materials and content, the topics in this subject are derived from simple phenomena. One simple material topic in the IPAS subject is the hydrological cycle or water cycle.

The crucial inclusion of the water cycle in the independent curriculum emphasizes its essential nature, given its simplicity as a natural phenomenon for elementary students. This serves as a foundational concept for exploring other natural phenomena in life. Consequently, as Indonesia strives to improve education quality through the independent curriculum, instructing these fundamental materials becomes both a necessity and a challenge for teachers to execute effectively and precisely. Assessing students' learning outcomes stands as a method to evaluate the success of an efficient learning process Learning outcomes are statements that are observable, measurable, and clear, outlining

the knowledge or achievements expected from a learner by the conclusion of the learning process (Khoza, 2016). The future income levels of students are profoundly influenced by their academic achievements (Werang, Suarjana, Dewi, & Asaloei, 2023). Hence, the importance of effective learning is paramount. Moreover, there are diverse approaches that can be utilized to efficiently convey content, and one of these methods involves the use of audio-visual learning resources. The crucial function of educational media is clear in improving the standard of teaching and learning. Additionally, media has the capability to enhance the appeal and pleasure of the learning process (Surbakti, Sitompul, & Saragih, 2023). Audiovisual media is a tool employing both auditory and visual senses to simulate scenarios, enabling learners to gain knowledge, skills, or attitudes (Yanti, Fauziah, & Hidayah, 2022). Utilizing audio-visual media has the potential to improve students' academic success by employing more efficient learning methods, allowing students to concentrate on the learning process (Husni & Wahab, 2023). There are various types of audiovisual media that can be used in the learning process, including animation. Animated messages are easily comprehended and capture more attention, particularly among children (Aeni, Nofriani, Fauziah, & Fauzi, 2022). Animation media encompasses a sequence of dynamic images complemented by sound and contains educational content. Typically, this media is presented via electronic devices to establish an interactive and pleasurable learning setting (Hambali, Akib, & Azis, 2020). Animated videos are created with the intention of transforming abstract concepts into visual illustrations. (Stiawan, Basuki, Liliasari, & Rohman, 2022). Additionally, Employing science and technology in education can include utilizing audiovisual learning media, particularly animated videos, as one alternative. (Aeni, Handari, Wijayanti, & Sutiana, 2022)

Several studies have been conducted regarding animation-based learning media. Among them, the conclusions obtained are as follows. Leveraging animation in contextual learning has the potential to streamline students' learning experience, increase their engagement and involvement, and, consequently, enhance the academic performance of fourth-grade students (Putu, Astawan, & Rati, 2022). Animation enhances students' enjoyment of learning and promotes active learning behavior. Moreover, students value the dynamic simulation and visualization elements of animation, which can improve their comprehension of scientific concepts (Mou, 2023). TThe use of animated video learning has been demonstrated to be enjoyable and in accordance with the preferences of students (Prasetya, Yanti, Nurrahman, & Aeni, 2022). The application of brain-based learning models with animation has a substantial impact on the outcomes of science education (Wulansari & Suarni, 2020). The created animated videos can serve as an alternative educational tool for the colloidal system subject, aiming to enhance students' interest in the learning process (Wulan Sadewi & Kamaludin, 2023). The created animated videos can serve as an alternative educational tool for the colloidal system subject, aiming to enhance students' interest in the learning process (Ahmad, Yakob, Bunyamin, Winarno, & Akmal, 2021). The use of animated videos to improve the understanding of "Asmaul Husna" for third-grade elementary school students showed an improvement. Initially, the pre-cycle knowledge was at 30%, and in cycle I, it increased to 85%. (Mila, Dhea, Aliffia, & Ani, 2022). From these studies, it can be concluded that animation media has a significant impact on factors related to and influencing students' learning outcomes..

In Indonesia, there are several animated films that have been developed as educational tools for children, one of which is the animated film "Riko the Series." The animated film "Riko the Series" is an Indonesian production, first released on the "Riko the series" YouTube channel on February 2, 2020. "Riko the Series" is one of the first original Indonesian animation productions broadcasted through the "Riko the series" YouTube channel on February 2, 2020. This film not only entertains but also aims to provide educational concepts. "Riko the Series" responds to parents' concerns about the lack of educational shows, especially for children in Indonesia. The animated film "Riko the Series" tells the story of a child named Riko who is always enthusiastic, independent, and curious about new things. Riko is always accompanied by an artificially intelligent robot named Qio, who plays an essential role in the animation. Additionally, there are characters from Riko's family, including Father, Mother, and Sister Wulan. The majority of the storyline in each episode of the animated film "Riko the Series" follows the same concept. Riko, a character always interested and curious about new things, has his curiosity answered by Qio through scientific explanations, creatively packaged with engaging imagination and language that is easily understood by children.

In this research, the Riko the Series will not be connected to its influence on character and morals, as in most previous studies. Instead, its connection will be focused on its influence on the water cycle material, which is one of the many essential topics in the concept of the Independence curriculum. It is also considered one of the most fundamental aspects to be realized in supporting the improvement of the quality of education in Indonesia.

This research aims to determine the influence of the Riko the Series on elementary school students' learning outcomes in the water cycle material. The learning outcomes referred to in this study are the achievements in the level of conceptual understanding in the cognitive domain. Comprehending scientific concepts is a crucial aspect of the process of learning science, as scientific literacy involves students' capacity to grasp these scientific ideas (Isra & Mufit, 2023). A solid grasp of concepts is deemed as the basis for students to attain the best possible learning results (Prajoko, Sukmawati, Maris, & Wulanjani, 2023). Conceptual understanding involves the capacity to articulate information or concepts using one's own expressions and to interpret or deduce from explanations, which may take various forms such as text, numbers, images, and so forth (Novanto, Anitra, & Wulandari, 2021). This comprehension pertains to an individual's capacity to grasp or comprehend a topic following its study and memorization. Conceptual understanding is essential for students as a robust grasp of concepts facilitates the exploration and acquisition of further knowledge built upon the mastered concepts. An individual is deemed to comprehend a concept if they can articulate the acquired information fluently. (Susanti & Ruqoyyah, 2021). Based on the definition of conceptual understanding, it can be concluded that an individual is considered to understand a concept if they can explain the previously learned material, both orally and in writing. Comprehending concepts is essential for students as it molds their comprehension of a phenomenon according to what they observe and undergo (Jufriadi, Sutopo, Kusairi, & Sunaryono, 2023)

▪ METHOD

Participant

The population in this study is all students from the fifth grade at Sukaraja 1 Public Elementary School. The sampling technique used is purposive sampling, with the sample from the experimental group consisting of 31 students from class V A at Sukaraja 1 Public Elementary School, including 18 male students and 13 female students. On the other hand, there is also a control group from class V B at Sukaraja.

Research Design and Procedures

This research is a quantitative study with Quasi-experiment as its research method. Quantitative research is a type of research designed to test specific theories by examining the relationships between various variables. Typically, these variables are measured using research instruments such as tests, questionnaires, or structured interviews, resulting in numerical data that can be analyzed using statistical calculation methods. On the other hand, the quasi-experimental method includes a research design that incorporates a minimum of two groups, with one group acting as the experimental group and the other serving as the control group (Rukminingsih, Adnan, & Latief, 2020)

In this research, the Nonequivalent Control Group design is utilized, involving pre-treatment testing (pretest) before the treatment and post-treatment testing (posttest) after the treatment in each group. In this design, the assignment of the experimental group and the control group is done without using a randomization method. The table and steps of the Nonequivalent Control Group design are as follows:

Table 1. Nonequivalent control group design

Sampling	Group	*Pretest*	Treatment	*Posttest*
Not Random	Experiment	Y1	X	Y2
Not Random	Control	Y1	…	Y2

In the Nonequivalent Control Group design, the researcher begins by selecting subjects with the same background based on the location and grade of the students. In this case, the researcher chose fourth-grade students from Sukaraja 1 Elementary School. Then, all subjects are divided into two groups, and these two groups are selected to be included in the experimental group or the control group. A pretest is then administered to obtain scores Y1 for both groups. After the pretest, the experimental group receives treatment in the form of water cycle learning using the media "Riko the Series" and a lecture, while the control group receives treatment in the form of water cycle learning using still images and a lecture. After the treatment is administered, all subjects are given a posttest to obtain scores Y2. Then, using statistical methods, the difference between the average values of Y1 and Y2 is calculated.

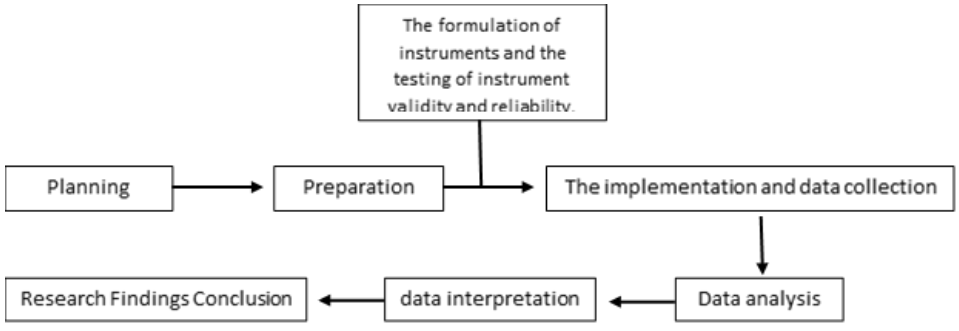

Figure 1. Research procedures

This research was conducted for 2 months, covering activities such as planning, preparation, implementation and data collection, data analysis, data interpretation, as well as the conclusion of research findings.

Location

The location used in this study is situated at Sukaraja 1 Public Elementary School in Sumedang. The school was chosen because it meets the necessary criteria that can minimize errors in this research, such as having a sufficient sample size for quasi-experimental research and essential facilities such as a projector and speaker, which can help maximize the use of Riko the Series as a treatment for the subjects.

Research Instrument

The instrument employed in this study is an essay test instrument. An essay test is a form of assessment that mandates individuals to arrange thoughts or information acquired, expressing them in writing as answers to given questions or instructions (Rosyidi, 2020). The essay test questions in this study were self-developed, consisting of 12 items that were pilot-tested to measure the understanding of the water cycle concept. The following table presents the items and indicators of the research instrument used. From the 12 test items, a trial and Pearson correlation test were conducted to determine the validity and reliability of the instrument.

Table 2. Test items and indicators of understanding the water cycle concept

Number	Indicator	Item Number
1	Restating the water cycle concept	1. 4. 6. and 9
2	Presenting the concept of the water cycle or the object of the water cycle concept in a representative form	3 and 8
3	Applying the water cycle concept to problem-solving	2.5.7.10.11. and 12

Table 3. Instrument validity test

		Item 1	Item 2	Item 3	Iteml 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12
Quantity	Pearson Correlation	.340	.469	.398	.609	.551	.448	.462	.502	.550	.772	.227	.739
	Sig. (2-Tailed)	.020	.001	.006	.001	.001	.001	.002	.001	.001	.001	.059	.001

During the validity testing, an item is deemed valid when its significance value is below 0.05. Based on the data, it is clear that item number 11 is the only one with a significance value exceeding 0.05, suggesting the question's lack of validity. In this research, items 11 and 12 are excluded, resulting in a total of 10 questions used, divided into 5 pretest and 5 posttest questions, with the additional benefit of optimizing the time for subjects to respond. The results of the reliability test on this instrument show a Cronbach's alpha value of 0.756. The instrument exhibits good reliability as the coefficient value is greater than 0.06 (Ghozali, 2016). This instrument is used to aid in addressing the research questions.

Table 4. Research question

Research Question
How is the difference in conceptual understanding among fourth-grade students before and after learning using the Riko the Series on the water cycle material?
How is the difference in conceptual understanding among fourth-grade students before and after learning without using Riko the Series on the water cycle material?
How is the influence of using Riko the Series and not using Riko the Series on the learning outcomes of elementary school students in the water cycle material?

Data Collection and Analysis Techniques

The data collection method in this research involves preparing various needs, such as composing pretest and posttest questions, planning the implementation of learning for both groups (experimental and control), using the Riko the Series media, equipment such as a projector, speaker, classroom, and recording tools such as pencils and notebooks for the researcher's needs. After everything is ready, data collection is carried out in the form of pretest and posttest results.

The data analysis technique is conducted through univariate analysis, including descriptive analysis to describe a set of data, as well as tests for normality and homogeneity as prerequisites. Additionally, bivariate analysis is performed using the t-test or its alternative to measure the influence on two different data groups. The data is analyzed using the SPSS calculation application.

▪ RESULT AND DISSCUSSION

Implementation of Riko the Series

In this study, 2 episodes of Riko the Series were used in the experimental class, namely the rain episode and the episode of playing with water. The rain episode was employed to assist students in learning to restate the water cycle concept and present the water cycle concept or the object of the water cycle concept in a representative form. Meanwhile, the episode of playing with water was used to help students understand the application of the water cycle concept to problem-solving.

Figure 2. Display of riko the series

Statistical Description

The data collected in this study are the results of pretest and posttest scores in the experimental class, which received treatment in the form of learning using the Riko the Series on the water cycle material, and the control class, which received conventional learning with still images on the water cycle material.

Table 5. Statistical description

	N	Minimum	Maksimum	Mean	Standar Deviation
Pretest Experiment	31	28	68	44.13	12.066
Posttest Experiment	31	36	100	65.55	19.451
Pretest Control	31	32	68	48.90	10.867
Posttest Control	31	36	88	61.29	13.639
Valid N	31				

Based on the information presented in Table 5. Accompanied by a standard deviation of 12.066. In the subsequent posttest for the experimental group, the sample size remained at 31, and scores ranged from the lowest value of 36 to the highest value of 100. The average posttest score was 65.55, with a standard deviation of 19.451. Similarly, the pretest for the control group involved 31 participants, with scores ranging from the lowest value of 32 to the highest value of 68. The mean pretest score was 48.90, and the standard deviation was 10.867. Finally, the posttest for the control group, with 31 participants, featured scores ranging from the lowest value of 36 to the highest value of 88. The mean posttest score was 61.29, and the standard deviation was 13.639. It is important to note that there are no instances of missing or deleted data in these findings, indicating that all data was successfully recorded

Prerequisite Test

After obtaining descriptive statistics, prerequisite tests were conducted on the data, namely the normality test and homogeneity test using the Levene formula, as this study only examined two data groups (Gliner, Morgan, & Leech, 2016)

Table 6. Normality test

		Kolmogorov-Mirnov			Shapiro-wilk		
	class	**Statistik**	**df**	**Sig.**	**Statistik**	**df**	**sig**
students' learning outcomes	Pretest experiment	.201	31	.002	.905	31	.010
	Posttest Experiment	.095	31	.200	.953	31	.194
	Pretest Control	.141	31	.123	.938	31	.071
	Postest Control	.172	31	.019	.956	31	.228

Based on Table 6, it is known that the sample size is 31 in each class, meaning the sample size is < 50. Because the sample size is < 50, the normality test using Shapiro-Wilk's test significance is employed to assess the data distribution. The decision-making basis for this test is if the significance value is > 0.05, it is assumed that the data has a normal distribution. Conversely, if the significance value is < 0.05, it is assumed that the data does not have a normal distribution. Based on Table 4, it can be seen that the significance value for the pretest experimental data is < 0.05, indicating that the data does not have a normal distribution. Meanwhile, for the posttest experimental, pretest control, and posttest control data, the significance value is > 0.05, indicating that these data have a distribution that can be considered normal.

Table 7. Homogeneity test

		Levene Statistic	**df1**	**df2**	**Sig.**
Students' Learning Outcomes	Based On mean	3.256	1	60	.076

The criterion for making decisions in homogeneity testing is that if the p-value is greater than 0.05, it is inferred that the data is homogeneous. On the flip side, if the significance value is less than 0.05, it is presumed that the data is not homogeneous. From the details provided in Table 5, it is disclosed that the p-value (Sig) based on the mean is 0.076, which is greater than 0.05, suggesting that there is homogeneity in the variances of the posttest data between the experimental and control groups.

The Difference in Fourth Grade Students' Conceptual Understanding Before and After Learning Using the "Riko the Series" on the Water Cycle Material

Table 8. Wilcoxon rank-sum test

		N	**Mean Rank**	**Sum of Rank**
Posttest Experiment-Pretest Experiment	Negative Rank	0[a]	.00	.00
	Positive Ranks	26[b]	13.50	351.00
	Ties	5[c]		
	Total	31		

To see if there is an effect on the pretest and posttest results of the experimental class, a nonparametric Wilcoxon test was conducted. This is because the pretest data for the experimental class did not have a normal distribution. This indicates that the data does not meet the criteria for undergoing a parametric test. From Table 8, it can be seen that the Negative Rank value between the pretest and posttest results is 0, both in terms of N, Mean Rank, and Sum of Rank. This indicates that there is no evidence of a decrease from the pretest to the posttest values. Meanwhile, there are 26 Positive Rank data (N) indicating an increase from the pretest to the posttest, with a Mean Rank of 13.50 and a Sum of Rank of 351.00. In addition, there are 5 Ties indicating that there are 5 values that did not change, either decreasing or increasing, from the pretest to the posttest.

Table 9. Wilcoxon signed-rank test

	Posttest Experiment-Pretest Experiment
Z	-4.463[b]
Asymp. Sig. (2-Tailed)	.001

The hypothesis in this test states "there is a difference between the pretest and posttest results in the Experimental class." The Wilcoxon test procedure is based on the Asymp. Sig. (2-Tailed) value, where if the value is < 0.05, the hypothesis will be accepted. Conversely, if the Asymp.Sig (2-Tailed) value is > 0.05, the hypothesis will be rejected. Based on the data in Table 7, the Asymp. Sig. (2-tailed) value obtained is 0.001. Because the value 0.001 < 0.05, this indicates that the hypothesis is accepted. In other words, there is a significant difference between the pretest and posttest results in the experimental class. Therefore, it is concluded that the Riko the Series has a significant impact on the learning outcomes of students in the experimental class on the water cycle material.

The results of the first study indicate a significant difference between the pretest and posttest results in the experimental class. Therefore, it can be concluded that the Riko the Series has a significant effect on students' learning outcomes in the experimental class. This finding is consistent with several studies, one of which shows that the use of animated media, such as the Riko the Series, has a significant impact on the learning outcomes of science, especially water cycle material in the fifth grade of MI Hidayatus Shibyan (Nurrofiqoh, Masnun, & Atikoh, 2018). Another research also indicates that utilizing animated videos as an educational tool significantly influences the academic achievements of fourth-grade students in Science at Elementary School 08 Sungai Rumbai. (Friska, Amanda, Novitasari, & Prananda, 2021). Utilizing animated media has the potential to boost students' engagement and academic performance in the Social Science curriculum for fifth-grade students at Elementary School 3 in the Jawa District of Pangkep Regency (Rustinah, Basri, & Muhazir, 2021).

The Difference in Conceptual Understanding of Fourth Grade Students Before and After Learning Without Using the "Riko the Series" on the Water Cycle Material

Table 10. Paired sample t-test

		Paired Differences							Significance	
					95% CI					
		Mean	S.Dev	SE	min	max	t	df	One-Sided p	Two-Side P
Pair 1	Pretest Control-Posttest Control	-12.378	12.279	2.205	-16.891	-7.883	-5.617	30	.001	.001

From the data in Table 10, a significance value was found indicating that the pretest and posttest results in the control class show a significant difference, with a value of 0.001 < 0.05. This indicates a significant difference between the pretest and posttest results in the control class, indicating an influence between the pretest and posttest results in the control class.

The results of the second study indicate a significant difference between the pretest and posttest scores in the control class. This suggests a significant influence on students' learning outcomes in the material of the water cycle even without involving Riko the Series. Based on the findings from the first and second studies, it can be concluded that there is a significant impact on the elementary school students' learning outcomes in the water cycle material, both when using Riko the Series and when not using Riko the Series. However, from the average score data, the conclusion can be drawn that students' learning outcomes in the water cycle material are better when using Riko the Series compared to when not using Riko the Series. The utilization of visual media in the control group within this research has demonstrated a notable enhancement in students' comprehension of the water cycle. This discovery corresponds with outcomes from various studies affirming that incorporating visuals into education can streamline the learning experience, enrich student comprehension, and contribute to accomplishing superior learning results. Consequently, it is suggested to contemplate the incorporation of visual media as a means of imparting information about the water cycle. (Nisa, Hurit, & Bary, 2023). Another investigation acknowledges that employing visual media assistance within the application of the cooperative learning model, particularly the group investigation type, has effectively enhanced the academic performance of eighth-grade students at SMPN Satap Karanggi Rowa (Joru, Makaborang, & Enda, 2023). The outcomes of Civic Education learning are influenced by the use of two-dimensional image media (Rusmin, Hafifa, & Hasan, 2022).

The Influence of Using Riko the Series and Not Using Riko the Series on Elementary School Students' Learning Outcomes in the Water Cycle Material

After finding an influence in both classes, experimental and control, the next data analysis was conducted to examine whether there is an influence between the learning outcomes in the experimental class and the learning outcomes in the control class. This was done by applying an independent t-test.

Table 11. Statistical Description f the independent sample t-test

	Class	N	Mean	S.Dev	SE
Student' Learning Outcomes	Control	31	61.29	13.636	2.450
	Experiment	31	65.55	19.451	3.493

Based on the data in Table 11, it can be observed that the average learning outcomes of students in the control class are 61.29, while the experimental class has an average of 65.55. This comparison indicates a difference in learning outcomes between the experimental class and the control class. Specifically, the experimental class demonstrates better performance compared to the control class, as seen from the achieved average scores.

Table 12. Independent sampel t-test

Levene's Test For Equality of Variances	t-test for Equality of Means

						significance				95% Confidence Interval of the Difference	
		f	Sig.	t	df	One-sided p	Two sided p	Mean Difference	Std. Error Difference	Lower	Uper
Hasil Belajar Siswa	Equal Variances assumsed	3.256	.076	-.998	60	.161	.322	-4.4258	4.267	-.12.793	4.277
	Equal variances not assumses			-.998	53.757	.161	.323	-.4258	4.267	-12.813	4.297

Based on the data in Table 12, it is known that the two-way significance value for student learning outcomes between the experimental class and the control class is 0.322 > 0.05. This indicates that there is no significant influence on student learning outcomes between the experimental class and the control class. These results are consistent with other studies indicating that children between the ages of 9 and 11 gain new information from contextual animation. Nevertheless, this contextual animation does not affect the multimedia learning outcomes in children when compared to static videos (Schubertová, Lukavský, Drobná, Volná, & Brom, 2023)

While the descriptive statistical analysis reveals variations in student learning outcomes between the experimental and control groups, the results of the independent sample t-test indicate that there is no significant impact on student learning outcomes between the two classes. Consequently, effect size calculations were carried out to assess the extent of the influence on learning outcomes between the experimental and control groups. To calculate the effect size, Cohen's D formula can be used.

$$\text{Effect Size} = \frac{\bar{X}_B - \bar{X}_A}{\frac{\sqrt{(S_A)^2 + (S_B)^2}}{2}}$$

Notes:
$\bar{X}A$: the mean score within the control group
$\bar{X}B$: the mean score within the experiment group
SA : the deviation from the average in the control group
SB : the deviation from the average in the experiment group

From the calculation using this formula, the obtained Effect Size value is 0.254.

Table 13. Criteria for cohen's d average effect size

Effect Size	Criteria
0.20	Low
0.50	Medium
0.80	Big

From table 13, if the effect size value is above 0.20, it falls into the category of a small effect. Conversely, if the effect size value is above 0.50, it is classified as a medium effect, and if it exceeds 0.80, it falls into the category of a large effect. It has been established that the experimental class is better than the control class based on the average learning outcomes. Then, based on the calculation using Cohen's D formula, it is known that the effect size value between the learning outcomes of students in the experimental class and the control class is 0.254. It can be concluded that Riko the Series has a low effect on the learning outcomes of elementary school students on the water cycle material.

The significant influence on the learning outcomes of the experimental class and the significant influence on the learning outcomes of the control class result in a small difference between the outcomes of the experimental class and the control class. Thus, Riko the Series has a low impact on the learning outcomes of elementary school students at Sukaraja 1 Public Elementary School in Sumedang on the water cycle material. A research with comparable findings indicated that the learning achievements of students showed improvement following the utilization of animated video applications, even though they still remained at a low level based on the criteria (Rahmatunnida, Busono, & Ardiansyah, 2020).

The experimental class, which utilized animated videos such as Riko the Series, significantly improved learning outcomes in the water cycle compared to the control class. These findings align with various studies, with some indicating that the utilization of animated media significantly influences the academic achievements of fourth-grade students at Telkom Makassar (Ramadhan, Rohana, & Pada, 2023). The utilization of a blended learning approach, reinforced by animated videos, influences the motivation and academic accomplishments in science among fifth-grade students at Cilangkap 01 Pagi Elementary School (Utami & Amaliyah, 2022).

The control class, which utilized visual media in this study, was also found to significantly improve learning outcomes in the water cycle. This result is consistent with several studies indicating that the use of images in learning can facilitate the learning process, enhance student understanding, and contribute to achieving better learning outcomes. Therefore, it is recommended to consider the use of visual media as one of the options for presenting information about the water cycle (Nisa et al., 2023). Visual media is effective in Science learning for fourth-grade students at Elementary School 03 Sungai Rumbai and can be considered as one of the considerations and alternatives in Science learning (Suwardi, 2023).

▪ CONCLUSION

The objective of this research is to assess the influence of the Riko the Series on the academic achievement of elementary school students in the topic of the water cycle. The research focuses on evaluating the cognitive aspects of learning outcomes. The predetermined population for this study is all fourth-grade students at Sukaraja 1 Public Elementary School in Sumedang. Initial research results indicate a significant impact on elementary school students' learning outcomes regarding the water cycle, whether or not Riko the Series is used. Subsequent research findings reveal that the learning approach involving Riko the Series yields better learning outcomes, as evidenced by higher average scores. However, when comparing learning outcomes between the experimental and control classes, no significant difference was found. To measure the influence in more

detail, effect size calculations were performed to assess the extent of the impact of the experimental class's learning outcomes on the control class's learning outcomes. The effect size calculation, based on Cohen's D criteria, was conducted considering the entire population of fourth-grade students at Sukaraja 1 Public Elementary School in Sumedang. It can be concluded that Riko the Series has a low impact on the learning outcomes of elementary school students at Sukaraja 1 Public Elementary School in Sumedang on the water cycle material, with an effect size value of 0.254.

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