



## The Use of the Ricosre Method in Biology Lessons on the Characteristics and Structure of Viruses in High School Students

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### Abstract:

*Suitable learning is needed for students and teachers. However, not all teachers can apply appropriate learning for their students. A good method for students is a method that can improve student learning outcomes. The purpose of this study is to describe the use of the Ricosre method in Biology lessons for Darul Faizin High School students, Bogor, to find out whether the Ricosre method can improve Biology learning outcomes for Darul Faizin High School students, Bogor and to find out how much learning improvement will be achieved in Darul Faizin High School students, Bogor. This research was conducted in Biology Subjects, Material Characteristics and Structure of Viruses. The research sample used in this study were students of class X SMKS Napala Bogor. the type of experiment is one type of group pre-test and post-test (The One Group Pretest Posttest). Treatment using the Ricosre method (mean of 64.9864 ) compared to before using the media (mean of 61.6240 ), increased by 3.36240. In other words, the use of media has a significant effect on the 95% confidence level. The Ricosre method can improve student learning outcomes, on Virus material. Ricosre's learning process activates students into unique and interesting learning. Students can solve existing problems. The material is clear and complete, making it easier for students to learn material about Viruses. Teachers can use this method, with new creativity and innovation.*

**Keywords:** Method, Ricosre, Biology

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## INTRODUCTION

Learning in this century requires creativity and innovation of teachers. in an easier way, so that a lifelong learning process is achieved (Leksono, A. W., et al, 2020) Biology is a subject

that requires renewable learning breakthroughs. Science that is developing rapidly and continues to change from time to time needs adaptation for teachers and education policy makers. Learning Biology is learning about phenomena that exist and occur in the natural environment through scientific activities by students, so that the right way to learn biology is by active and contextual learning (Alimah, S. 2021).

Biology subject teachers are required to be able to carry out practical learning, although sometimes they do not have adequate facilities and infrastructure. That is a problem in itself. Students also benefit from this situation. Facilities and infrastructure can provide convenience for learning Biology. Another problem arises if the teacher's teaching time becomes limited if the teacher has other activities, such as meetings, family problems and so on. According to the observations of researchers in several schools, the development of learning tools is not optimal and the teacher's lack of awareness to adjust learning tools from time to time in order to update knowledge and change the curriculum.

The results of interviews at the first opportunity to subject teachers at the Napala Vocational School, Bogor, the teacher had difficulties in being able to improve Biology learning outcomes. Teachers have not optimally used existing resources. The application of biological materials not only requires students to understand conceptual knowledge and basic laws of biology but also develops skills to use their knowledge in problem solving. Biology learning emphasizes providing direct experience that can be obtained from everyday life, the surrounding environment, and society that is full of technology (Kariawan, 2015).

One of the learning methods that can be used and proven to improve learning outcomes is Ricosre. The Ricosre method is a learning stage that starts from reading (reading), identifying problems (identifying problems), constructing solutions (constructing the solution, solving problems (solve the problem) and expanding problem solutions (extending the problem solution). is expected to be a stage that can train students to think critically and improve skills. Based on the description above, the limitations of the problem can be stated as follows, first, how is the use of the Ricosre method in Biology lessons for Darul Faizin high school students, Bogor? Ricosre?.

The purpose of this study is to describe the use of the Ricosre method in Biology lessons for Darul Faizin Napala High School students, Bogor ?, to find out whether the Ricosre method can improve Biology learning outcomes for Darul Faizin High School students, Bogor and to find out how much learning improvement will be achieved. to Darul Faizin High School students, Bogor.

## **LITERATURE REVIEW**

### **Method**

Method according to the Indonesian dictionary means the regular way used to carry out a job so that it is achieved as desired; a systematic way of working to facilitate the implementation of an activity in order to achieve the specified goals. The word "method" refers to a way or path that must be done by someone in order to achieve a desired goal.

From this explanation, we can conclude that the notion of a method is a systematic method or process used to carry out an activity so that the desired goal can be achieved. In other words, the method serves as a tool to achieve a goal, or how to do/make something.

A method is used as a reference for activities because in it there is an orderly sequence of steps so that the process of achieving goals becomes more efficient. In relation to scientific efforts, the method is a way of working to be able to understand the object that is the target of the science concerned.

## **Ricosre**

The Ricosre method is a learning stage that starts from reading (reading), identifying problems (identifying problems), constructing the solution (constructing the solution), solving problems (solve the problem) and expanding the problem solution (extending the problem solution).

The first syntax is reading, reading is the key to academic success for students all students . Reading activity is a thought process to build meaning. Reading consists of a series of complex processes, involving physiological, psychological, social, affective, cognitive, and metacognitive, in reconstructing prior knowledge, in analyzing the meaning of words in the text, and in concluding the core and meta structure of the text.

The second syntax is identifying the problem, an activity of structuring unstructured problems in the form of problem formulation. Formulating the problem is an activity that not only involves finding the problem, but also in-depth exploration to find out the underlying causes of the problem. The principle of solving a problem, namely understanding the meaning of the problem and how to solve it, is critical thinking. The third syntax is constructing the solution, students must be able to design solution paths to solve problems, maybe one solution or more than one solution depending on the ability of students. identify problems continue to build solutions in many dimensions being flexible, and generating original ideas is the main ability in creative thinking. The fourth syntax is solving the problem, which is a stage in solving problems, this activity implements strategies to solve problems that have been selected in the previous stage. HOTS can be taught and learned, by facilitating students to apply their thinking skills to solve problems. Continued to the fifth and sixth syntax, namely reviewing the problem solving, and extending the problem solving. At this stage students communicate the results of the investigations obtained to other students to get input and analyze the effectiveness and efficiency of the solutions they choose to apply to similar problems.

## **Biology**

Biology is the study of the origin, evolution and characteristics of living things, as well as their vital processes, behavior and interactions with each other and with the environment. Such a word is formed from the Greek roots (bíos), which means 'life', and -λογία (-logy), which means 'science' or 'study'. Thus, biology is responsible for describing and explaining the behavior and characteristics that distinguish living things, both as individuals, and as a whole, as species. One of the basic goals of biology is to establish the laws that govern the life of organisms. That is, it includes the study of the origin of life and its evolution during our existence. Therefore, it is necessary to carry out research and assessment of living things continuously. This allows us to better understand how complex microorganisms are and how our bodies work. Similarly, scientific research in biology has enabled various specialists to create drugs and vaccines that fight infection or prevent disease to improve the quality of our lives, including animals and plants. Therefore, Biology is also a science that brings extraordinary knowledge into other branches of scientific study.

## **METHODOLOGY**

This research was conducted in the even semester of 2020-2021. This research was conducted in Biology Subjects, Material Characteristics and Structure of Viruses. Population and Research Sample The population used in this study were students of class X SMA Darul Faizin Bogor. Determination of the class sample during the study was determined by random sampling technique. Samples were taken from Darul Faizin High School students, Bogor. The sample class was taken, namely one class as the experimental class. The number of students is 36 students. The researcher gave questions before using the Ricosre method to students, at the next meeting, the researcher was assisted by the teacher, discussing the material using the

Ricosre method. After that, the researcher gave 40 multiple choice questions containing material about the characteristics and structure of viruses, to see the results of Ricosre's learning.

The method used is the experimental method. The type of experimental method used is the type of experiment with one group pre-test and post-test (The One Group Pretest Posttest). This model is more perfect because it uses an initial test (pretest) then after being given treatment, measurements are taken (posttest) to determine the effect of the treatment (treatment), so that the magnitude of the effect of the experiment can be known with certainty. The instrument used is in the form of a test. The data will be tested for assumptions, normality and homogeneity and use the t-test (One Sample t Test). Calculations using SPSS 22. The scheme of the research model is:

Table 1. Research Scheme Design

| <b>T1</b>      | <b>X</b>  | <b>T2</b> |
|----------------|-----------|-----------|
| <b>Pretest</b> | Treatment | Posttest  |

Description :

- T1 : Pre-test given to class experiment at the beginning of research
- X : The treatment given to the class experiment: Ricosre method
- T2 : The final test given to the class experiment at the end of the study

## RESULTS AND DISCUSSION

In the experimental process, the researcher conducted interviews with the Biology subject teacher. Biology subject teacher said that students, have not maximized to learn. The researcher processed the test result data into normality and homogeneity tests. If the results of the normality and homogeneity tests have no problems, the researcher proceeds to the paired t-test



Figure 1. A student is doing a test

Students did a post test after using the Ricosre method in Biology. Students feel they can answer and apply all the material that has been given.

Table. 2 Normality table

|              | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |      |
|--------------|---------------------------------|----|------|--------------|----|------|
|              | Statistic                       | df | Sig. | Statistic    | df | Sig. |
| <b>Nilai</b> | .079                            | 25 | .201 | .976         | 25 | .812 |

\*

At the significance level = 5%, the Kolmogorov-Smirnov (KS) column in table 2, because = 5% = 0.05 < Sig. = 0.201, then Ho is not rejected. At the significance level = 5%, the Shapiro-Wilk (SW) column in table 2, because = 5% = 0.05 < Sig. = 0.812, then Ho is not rejected. From the KS and SW tests, it can be concluded, because Ho is accepted, the assumption is that the data sample comes from a normal distribution.

Table 3. Homogeneity table

**Tabel.3 Uji Homogenitas Varians Levene Test of Homogeneity of Variances**

| nilai  |           |     |     |      |
|--------|-----------|-----|-----|------|
| Levene | Statistic | df1 | df2 | Sig. |
|        | .017      | 1   | 48  | .875 |

The significance level = 5%, in table 3, column Sig. Because = 5% = 0.05 < Sig.0.875, then H0 is not rejected, in other words, the assumption of homogeneity of variance can be fulfilled.

Table 4. T-Test

|               |                     | Mean    | N  | Std. Deviation | Std. Error Mean |
|---------------|---------------------|---------|----|----------------|-----------------|
| <b>Pair 1</b> | Nilai_sebelum_media | 61.6240 | 36 | 8.41051        | 1.68223         |
|               | Nilai_sudah_media   | 64.9864 | 36 | 8.66866        | 1.73381         |

In table 4 above, the average value before using the method is 61.7240 with a standard deviation of 8.41051, while the value after using the method is 64.9864 with a standard deviation of 1.73381. Based on the results of table 5, Paired Sample T-Test with a significant

level of = 5%, then  $0.05 > \text{Sig.} = 0$ , then  $H_0$  is rejected. Decision making in the above way can get the same results, namely  $H_0$  is rejected. It can be concluded that at the 95% confidence level, the average mastery of the material after treatment using the Ricosre method (mean 64.9864) compared to before using the media (mean 61.6240), increased by 3.36240. In other words, the use of media has a significant effect on the 95% confidence level.

The above results are in accordance with the research of Fahruli, M. T. A. (2019). Which states that the Ricosre method affects students' scientific literacy results. The Ricosre method can be used by teachers to develop Biology subject skills. Likewise with the research of sister Noviyanti, N. I. (2019). Which states that Ricosre's learning has an effect on students' cognitive. Learning using the Ricosre method is a method that can improve science literacy in students (Mahanal, S., & Zubaidah, S., 2017).

The learning process in the classroom starts from reading, identifying problems, constructing solutions, solving problems and expanding problem solutions. To explain further, a table is made as follows:

Table 5. Learning the Ricosre method for Virus Identification in Biology Lessons

| No | Activities            | Description   | Explanation   |
|----|-----------------------|---|---|
| 1  | Reading               | Students are given pictures and shapes of viruses, and try to explain to classmates   | The teacher supervises, and occasionally asks questions, as well as answers questions from students |
| 2  | Identify the problems | Students begin to give some questions to friends or teachers, if they can answer or not, they are still asked for their opinions, how the problem arises, for example there is a virus that can be deadly, and a virus that is not deadly<br>Students try to construct answers to existing problems, such as how to prevent viruses from spreading in the human body, and so on | The teacher gives the futher information about the material to the students.                        |
| 3  | Contruct the solution | Students try to construct answers to existing problems, such as how to prevent viruses from spreading in the human body, and so on  | The teacher help to complete the contruction answer.  |

|   |                             |  |   |
|---|-----------------------------|--|---|
| 4 | Solve the problems          | Students answer and convey the correct answer to other students or teachers. Students look for alternative answers, or provide other solutions to existing problems. | The teacher gives an opinion, as well as perfecting the answer, if the answer is wrong, the teacher is obliged to correct it. |
| 5 | Extend the construct answer | Students look for alternative answers, or provide other solutions to existing problems.  | Teacher help to give the alternative answer.  |

In the picture of the structure of the virus, students can read the explanatory text and the picture carefully. Then students can ask questions and look at the pictures they have read.

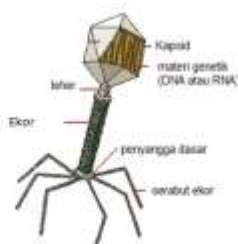


Figure 2. virus structure. (Source: <http://library.pandani.web.id>)

In figure 4, students analyze the existing forms of the virus, including making pictures of the shape of the corona virus that is being studied by experts in the world.

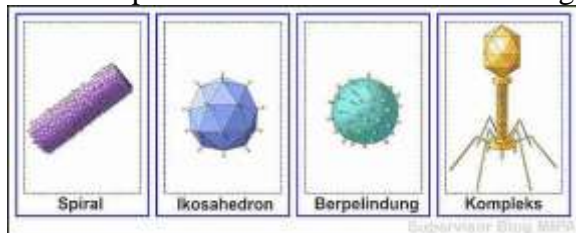


Figure 3. Viruses (Source: [www.biologijkcom](http://www.biologijkcom))

### CONCLUSION

Treatment using the Ricosre method (mean of 64.9864 ) compared to before using the media (mean of 61.6240 ), increased by 3.36240. In other words, the use of media has a significant effect on the 95% confidence level. The Ricosre method can improve student learning outcomes, on Virus material.

Ricosre's learning process activates students into unique and interesting learning. Students can solve existing problems. The material is clear and complete, making it easier for students to learn material about Viruses.

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