

## **The analysis of SQ3R in reading learning process for mechanical engineering students of Politeknik Harapan Bersama**

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**Abstract.** This research was motivated by low ability in English subject, reading comprehension in particular among students in Mechanical Engineering study program. Politeknik Harapan Bersama. Based on some related studies, SQ3R technique is as one of learning techniques that proved to enhance reading skills. This research was conducted with the assumption that the technique was able to improve reading comprehension. Therefore, the purpose of the current study was to determine the effect of SQ3R technique on students' reading comprehension. The research presented 2 variables namely SQ3R technique (X) and reading comprehension (Y). Pre-Experimental method of One Group Pretest-Posttest Design was implemented with one class of Mechanical Engineering consisting 26 male and 1 female student involved during the study. Data were gained through cloze test and observation sheet. All data were then processed and analyzed quantitatively to determine the effect of the SQ3R technique on the students' ability to comprehend the passage. The results showed that  $t_{count}$  (5.001) was greater than  $t_{table}$  (2.080). Thus, this can be concluded that SQ3R technique has positive effect (54.4%) on the students' reading comprehension.

**Keywords:** SQ3R technique, reading, understanding

## **INTRODUCTION**

Many reading methods are offered by experts, but in this study the author will discuss one of them, the SQ3R method. The SQ3R method provides a strategy that begins with building an overview of the material being studied, raises questions from the title, and continues with reading to find answers to questions. Reading with the SQ3R method consists of five processes, namely: Survey or review, Question or ask, Read or read, Recite or tell, and Review or repeat. Several previous studies that are appropriate and support learning using the SQ3R model (Survey, Question, Read, Recite and Review), including: (Tarigan et.al, 2020) in his research conveys the effect of the SQ3R learning method on student learning outcomes on the theme of the beauty of togetherness, the influence of learning methods SQ3R on student learning outcomes has a high influence. there is a positive and significant influence between parental attention to student learning outcomes (Aziz, 2020).

The implementation of using SQ3R is very helpful in improving reading comprehension skills. Students can also quickly find important topics. Students are also more familiar with reading material as a whole (Syahrudin et.al, 2019). The combination of the TPS and SQ3R learning models can improve student learning outcomes. The learning outcomes of students who use a combination of the Think Pair Share model with Survey Question Read Recite Review are better than Think Pair Share and Survey Question Read Recite Review.

(Indah et.al, 2021) In research that has been conducted at SMA Negeri 1 Gunung Meriah regarding the comparison of learning achievement using the SQ3R learning method and the discussion method, it can be concluded that there is a significant difference between learning achievement using the SQ3R learning method and the discussion method, and in this study the method SQ3R learning is better than the discussion method. (Rahmadani, 2020). (Survey, Question, Read, Recite and Review) assisted by ethnomathematics-oriented worksheets towards the ability to understand students' mathematical concepts and are better than lecture and discussion methods. The application of learning using the SQ3R model assisted by ethnomathematics-oriented worksheets provides better results in improving students' mathematical concept understanding abilities. (Maesaroh, n.d, 2021) there was a positive behavior change in students after participating in learning using the SQ3R method. Changes in student behavior are based on the elaboration of character values, namely activeness, self-confidence, cooperation, independence, and positive responses. Teaching reading has been conducted by Susanto (2013), in his study he said about The Teaching Analysis of Reading Comprehension: a Case of the Eight Grade Students of SMP PGRI 01 Semarang.

Positive behavior changes are evident from the results of observations, teacher journals, student journals, interviews, and photo documentation in cycle I and cycle II (Atikah et.all, 2017). Based on the results of teacher performance at the planning and implementation stages, student activities, and student learning outcomes have increased each cycle. Thus, it can be concluded that the application of the survey, question, read, recite, review (SQ3R) method with this rainbow post game can improve student learning outcomes in concluding the content of the story (Sobri, 2017). Based on the results of his research, it can be concluded that the SQ3R method can improve students' reading comprehension. This proves that students become active and focused readers so that they can understand the implied and explicit content of reading effectively, there is an increase in students' communication skills.

The SQ3R method is very appropriate to use in learning to read to improve reading comprehension optimally (Aminah & Emilda, 2020). After learning using the SQ3R method there was an increase, the average post-test score was 91.4, the standard of completeness was 100% from the number of students as many as 20 people (Juliawati, 2017). The results showed that reading comprehension skills using the SQ3R method were higher than reading comprehension skills using the discussion method. It can be concluded that the SQ3R method is more effective than the discussion method. Based on the research results that have been mentioned, the researcher assumes that research on the SQ3R method is an interesting research to do because previous studies have shown that the SQ3R method is effective on students' reading comprehension skills. However, in the research that has been mentioned, there are differences with the research that will be carried out by the researcher. The difference lies in the population and research sample, the time of the study, the material to be delivered and the place of research.

## **METHOD**

This study intended to describe the effect of the SQ3R technique on students' reading comprehension skills. Therefore, the study applied experimental research methods. The experimental research method was chosen in order to find the effect of certain treatments in Pre-Experimental with One-Group Pretest-Posttest Design. The research located in DIII Mechanical Engineering Study Program, Politeknik Harapan Bersama of 4A class totaling

27 students as sample in the study. The class was chosen because of their lack of ability in comprehending reading passage consisted of 26 males and 1 female.

The researcher provided three instruments during the study. Some biography passages of mechanical engineering experts were given using SQ3R technique. Meanwhile, a multiple choice answering 20 questions was addressed to measure the student's comprehension on provided text. Correct answer marked 1 score. Thus, the highest score obtained by students was 20. Observation sheets to get further description on their responses and activities during the treatment were addressed. Research procedures were as follow:

1. Students were divided into several groups in pretest;
2. Students were given 2 meetings treatment using SQ3R;
3. Students were given a multiple-choice question in post-test;

## FINDINGS AND DISCUSSION

### *Findings*

#### *1. Pre-Test and Post Test Results*

Results of the Pre-Test and Post-Test were determined by distributing multiple choice consisting 20 questions. The tests were employed in order to analyzed the ability of students' in comprehending the passages. The results are shown in the following figure:

| Student Code | Pre-Test |               | Post-Test |               | Gain Score |
|--------------|----------|---------------|-----------|---------------|------------|
|              | Score    | Ability Level | Score     | Ability Level |            |
| S-1          | 14       | high          | 20        | very high     | 6          |
| S-2          | 11       | middle        | 19        | very high     | 8          |
| S-3          | 17       | very high     | 20        | very high     | 3          |
| S-4          | 15       | high          | 18        | very high     | 3          |
| S-5          | 16       | very high     | 18        | very high     | 2          |
| S-6          | 8        | low           | 14        | high          | 6          |
| S-7          | 9        | middle        | 15        | high          | 6          |
| S-8          | 5        | very low      | 14        | high          | 9          |
| S-9          | 8        | low           | 14        | high          | 6          |
| S-10         | 15       | high          | 16        | very high     | 1          |
| S-11         | 12       | middle        | 15        | high          | 3          |
| S-12         | 8        | low           | 21        | very high     | 13         |
| S-13         | 7        | low           | 14        | high          | 7          |
| S-14         | 9        | middle        | 18        | very high     | 9          |
| S-15         | 9        | middle        | 14        | high          | 5          |
| S-16         | 14       | high          | 19        | very high     | 5          |
| S-17         | 10       | middle        | 15        | high          | 5          |
| S-18         | 11       | middle        | 15        | high          | 4          |
| S-19         | 9        | middle        | 15        | high          | 6          |
| S-20         | 5        | very low      | 13        | high          | 8          |
| S-21         | 5        | very low      | 14        | high          | 9          |
| S-22         | 13       | high          | 18        | very high     | 5          |
| S-23         | 17       | very high     | 21        | very high     | 4          |
| S-24         | 11       | middle        | 19        | very high     | 8          |
| S-25         | 17       | very high     | 20        | very high     | 3          |
| S-26         | 15       | high          | 18        | very high     | 3          |
| S-27         | 16       | very high     | 18        | very high     | 2          |

**Figure 1.** Result of Pre-Test and Post Test

According to the above the table, post-test score reaches higher than the pre-test. This can also be observed from different scores gained between Post Test and Pre-Test session. The scores then processed using the SPSS 16.0 statistical calculation. The result is shown on the figure below.

|                |         | Pretest | Posttest |
|----------------|---------|---------|----------|
| N              | Valid   | 27      | 27       |
|                | Missing | 0       | 0        |
| Mean           |         | 11.3348 | 16.8517  |
| Median         |         | 10      | 15       |
| Mode           |         | 9       | 14       |
| Std. Deviation |         | 3.53972 | 2.59141  |
| Variance       |         | 12.53   | 6.715    |
| Range          |         | 12      | 8        |
| Minimum        |         | 5       | 13       |
| Maximum        |         | 17      | 21       |
| Sum            |         | 240     | 380      |

**Figure 2.** Statistical Output of the Pre-Test and Post-Test Results

From 27 students, Mean value before treatment shows 11.33 (pre-test) with Minimum score of 5. Meanwhile, Mean value after treatment shows 16.85 (post-test) with Minimum score of 13. This means that there are different results gained by the students after the implementation of SQ3R technique.

### ***Normality Test***

Normality test is a requirement for statistical analysis. Normality test is used to determine whether the data population is normally distributed or not. The normality test was carried out with the help of a computer, namely the Ms. Excel using the chi square formula. Based on the calculation in the expected frequency table, the following data are obtained: 1) Pre-Test: the calculated  $X^2$  value = -21.26 is smaller than  $X^2$  table  $X^2 (0.95) (2) = 5.97$ , so it can be concluded that the Pre-Test data is proven to be normally distributed ; 2) Post Test:  $X^2$  value count= -38.57 is smaller than  $X^2$  table  $X^2 (0.95) (2) = 5.97$  then it can be concluded that the data Post Test proved to be normally distributed. From the calculation results show that the Pre-Test and Post-Test data are proven to be normally distributed. This means that the sample data can be generalized to population. After the normality test was carried out, the homogeneity test was then carried out as a condition for testing the hypothesis.

### ***2. Homogeneity test***

Homogeneity test was conducted to ensure that each group being compared was a group that had homogeneous variance. The homogeneity of variance test was carried out by using the Hartley-Pearson F max test. Based on the calculations obtained data  $F_{count} = 1.87$  and  $F_{table} = 2.047$

Because  $F_{\text{count}} = 1.87$  is smaller than  $F_{\text{table}} = 2.047$ , it can be concluded that the data of the two groups has homogeneous variance. This can be interpreted that the changes that occur that cause differences after treatment are only caused by the treatment.

For further statistical tests, the researchers used parametric statistical tests, because the data on students' reading comprehension scores were normally distributed and the data was homogeneous, which was one of the conditions for the parametric statistical test.

### ***3. Hypothesis Test***

Hypothesis testing was carried out using a comparative hypothesis test between two different variables, namely between students' reading comprehension skills before using the SQ3R technique and students' reading comprehension skills after using the SQ3R technique. Researchers tested the hypothesis by using SPSS 16.0. Hypothesis testing was carried out on the scores of the Pre-Test and Post Test results. Because the data are normally distributed and homogeneous, then the hypothesis testing is carried out with parametric statistics using paired t-test (Paired Sample t). The t-test using the SPSS 16.0 program is carried out by comparing t-count with t-table with the following conditions:

$t_{\text{count}} > t_{\text{table}} = H_a$  is accepted and  $H_0$  is rejected  
 $t_{\text{count}} < t_{\text{table}} = H_0$  is accepted and  $H_a$  is rejected  
Based on the significance:

Significance  $> 0.05 = H_0$  accepted  
Significance  $< 0.05 = H_0$  rejected

Before calculating, the hypothesis is formulated as follows:

$H_0$ : There is no effect of SQ3R technique on students' reading comprehension ability.

$H_a$ : There is an effect of SQ3R technique on students' reading comprehension ability,

From the calculation results, the t-count value is 5,001 and the significance is 0,000. The t table is seen in the statistical table with a significance of  $0.05/2 = 0.025$  with degrees of freedom  $df = n-2$  or  $27-2 = 25$ . The results obtained for the t table are 2.080.

Because t arithmetic (5.001) is greater than t table (2.080) and significance (0.000) is less than 0.05, then  $H_0$  is rejected. So, it can be concluded that the SQ3R technique affects students' reading comprehension skills.

### ***4. Coefficient of determination Test***

The calculation of the coefficient of determination is intended to determine how much influence the independent variable has on the dependent variable. In this study, researchers conducted a regression test to determine the value of R Square whose calculations were assisted by SPSS 16.0. The results of processing the Regression test data are as follows:

The number  $R = 0.737$ , it means that the correlation between the variable "Use of SQ3R Technique" and "Students' Reading Comprehension Ability" is 0.737. This means that there is a strong relationship because the R value is close to 1.

The value of  $R^2 = 0.544$ , it means that the percentage of influence given by the variable "Use of SQ3R Technique" on "Students' Reading Comprehension Ability" is 56.4%.

### ***Discussion***

Based on the tests, the results show that scores after the treatment on Post Test is better than the previous score on Pre-Test. Average score on Pre-Test obtained 11.33 with the highest score of 17 and the lowest of 5. Meanwhile, average score on Post-Test obtained 16.85 with the highest score of 21 and the lowest score of 13. This shows that there is a significant effect of the implementation of SQ3R technique on the students' reading

comprehension. This can be seen by the increase average scores between Pre-Test 11.33 (before using SQ3R) and Post Test 16.85 (after using SQ3R).

In addition, hypotheses test resulted  $t_{count}$  of 5,001 and  $t_{table}$  of 2,080 or  $t_{count} > t_{table}$  with  $t_{value}$  of 56.4%. This means  $H_1$  is accepted. In other words, learning through the use of SQ3R technique has a positive effect in improving students' ability in comprehending the passage.

## CONCLUSION

Learning through the use of SQ3R technique has a positive effect in improving students' ability in comprehending the passage in particular. Furthermore, the techniques proved to have positive influence on their learning experience. Although, the activities carried out within three meetings faced some challenges to meet more enjoyable situation, the technique has successfully boosted the students' involvement. The results will be very beneficial for further researchers to conduct related study in various contexts or subjects.

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