



## THE EFFECT OF PRACTICUM METHODS ON SCIENCE LEARNING OUTCOMES IN GRADE VIII OF 1<sup>st</sup> KOTO KAMPAR HULU JUNIOR HIGH SCHOOL

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### ABSTRACT

This study aims to determine the improvement of students in class VIII learning outcomes in Junior High School 1 Koto Kampar Hulu through the implementation of the practicum method. The type of this research was a quasi-experiment with the research design post-test only control group design. Data collection was conducted using the multiple-choice test. Data collection was analyzed using inferential statistics to obtain average scores of student learning outcomes in the control class of 67.14 and experiment class 77.86. Hypothesis testing uses the t-test, and the results show that the null hypothesis is rejected, and the alternative hypothesis is accepted which indicates that there is an effect on the implementation of practicum methods, with an effect size value of 0.84 with a large category indicating that there is a major influence. From the results of this study, it can be concluded that learning science using the practicum method can improve student learning outcomes in class VIII at Junior High School 1 Koto Kampar Hulu.

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**Keywords:** Practicum method, Learning Science, Learning Outcomes

## INTRODUCTION

Learning is an activity to seek latest information or knowledge from something that already exists in nature (Arif, et al. 2007). One of the fields of science that is closely related to nature is science. Usman (2006) defines natural science as a science that deals with natural phenomena and structured objects, in the form of a collection of observations and research results. The science learning process at school can be a way for students to learn about their environment. The science learning process at school can be a way for students to learn about their environment. The prospect of development in the science learning process is by applying it in everyday life through various kinds of coverage learned in schools such as a collection of facts, the process of obtaining these facts is based on the ability to use basic science knowledge to predict and explain various kinds of phenomena (Haryono, 2019). According to Prabowo (2015) science learning provides direct experience to understand scientifically about the natural surroundings so that it can develop students' thinking skills in the form of cognitive, psychomotor, and social skills. According to Prabowo (2015) science learning provides direct experience to students in understanding scientifically about the natural surroundings so that it can improve students' thinking skills in the form of cognitive, psychomotor, and social skills.

In the 2013 curriculum, science learning consists mainly of process skills of basic process skills and advanced process skills. Basic process skills consist of measuring, observation, inference, prediction, classification, and communication activities (Susilowati, 2014). In implementing the 2013 curriculum,

scientific learning activities will be developed using scientific approaches (observing, measuring, questioning, experimenting, communicating) and other scientific process skills.

Regulation of the Minister of Education and Culture number 35 of 2018 states that Science Learning is carried out in an integrated manner. The science learning process is integrated through Biology, Physics, and Chemistry content. According to Trianto (2012) integrated science learning can motivate student learning and increase the level of student learning skills. According to Pratiwi, et al. (2015) learning science is composed of some knowledge consisting of facts, concepts, principles, and the process of an invention. Science learning emphasizes the experience gained directly by students in developing their potential, so that students can understand the natural surroundings from the process of finding out which will help students gain experience about the natural surroundings (Handayani, 2021). Therefore, it can be concluded that science learning in the 2013 curriculum is carried out in an integrated manner which requires students to be actively involved in the learning process so that they can improve their skills and understand the concept of science learning more optimal.

The rapid development of science subjects today is inseparable from the use of learning strategies and approaches as well as the scientific method in their application. According to Yusuf (2018) physics is seen as a process and at the same time a product so that learning must consider effective and efficient learning strategies or methods, one of which is through practical activities. This happens because with practical activities, students directly do think and hand exercises.

Hands-on activities in physics learning contribute to motivation, develop students' skills, and provide opportunities to improve the quality of learning. According to Rafifah (2021) the learning method with practicum activities can be said to be one of the learning strategies that can provide direct experience to students in observing a phenomenon that occurs, so that it can attract students' interest to better understand the concepts that have been taught. The practicum method, in other words, can be interpreted as one of the learning methods by conducting direct proof of a concept in the material that students have studied.

Based on the interviews with science teachers in the of 1 Koto Kampar Hulu Junior High School, it was journal students learning outcomes in science still below the expectancy, this was related to online learning which was carried out for almost 2 years due to pandemic outbreak.

According to Rigianti (2020), teachers experienced many obstacles due to the transition from learning activities to online learning during the pandemic. Further Research Purwanto, et al. (2020) shows that there are learning challenges during the Covid-19 pandemic. The challenges faced by students include limited opportunities for communication and outreach among students (Handayani, 2021). In addition, students' grades have declined. In addition, students' grades have declined. Assessment itself is a general term that includes all methods used to obtain information about student learning outcomes (observation, assessment, testing) and to assess the learning process (Beidas et al., 2022; Janssens et al., 2022). The term assessment assesses student learning processes, progress, and outcomes (Molina Saorín et al., 2014; Urcola-Pardo et al., 2017).

Thus, it can be concluded that assessment is the right term to assess student learning processes which are called student learning outcomes (Walid A et al 2023).

The science learning process of 1 Koto Kampar Hulu Junior High School grade VIII mainly adopts a lecture method that utilizes the package book published by the Ministry of Education, Culture, Sports, Science and Technology in 2017. This makes students less involved in the learning process, and the scientific concepts they learn are less memorable and easily forgotten.

Based on the recap of the results of the overall interview with the science teacher at 1 Koto Kampar Hulu Junior High School it can be concluded that the low science learning outcomes of students at 1 Koto Kampar Hulu Junior High School are due to the use of inappropriate methods in the learning process which results in students being less involved in the learning process, so that researchers feel the need for the application of the right method, one of which is the practicum method. According to Kasmawati 2019, learning using the practicum method will make the material easier to understand, this is because the material presented must be understood almost completely in a concrete (real) form so that the practicum method will further increase understanding of the material presented Thus, by applying the practicum method to science learning at junior high school 1 Koto Kampar Hulu, it is hoped that it can improve students' science learning outcomes.

Based on the facts found in the field, the researcher wanted to conduct a study entitled: "The Influence of the Practicum Method on Science Learning Outcomes of

Grade VIII Students at 1 Koto Kampar Hulu Junior High Schools". Through the application of the practicum method, it is hoped that it can improve student learning outcomes in student science learning of 1 Koto Kampar Hulu Junior High School .

The purpose of this study was to find out whether the practicum method influenced Science Learning Outcomes for Class VIII students of 1 Koto Kampar Hulu Junior High School. With the research question, does the use of the practicum method affect the science learning outcomes of class VIII students of 1 Koto Kampar Hulu Junior High School.

### METHOD

The type of study conducted was a quantitative study using quasi-experimental research methods with a post-trial only control group design. In this design he has two groups, each randomly selected. The first group received X treatment, the other group received no treatment (Sugiyono, 2012).

The description of the research design is stated in table 1 below:

**Table 1.** The research designs.

Group	Treatment	Posttest
Experiment	X	O <sub>2</sub>
Control		O <sub>4</sub>

X = Treatment using practicum methods

O<sub>2</sub>= Final test in the experimental group

O<sub>4</sub>= Final test in the control group

In this design there is no comparison of the treatment imposed on other groups (Mustami, 2015).

This research was conducted in the Even Semester of 2022/2023, in 1 Koto Kampar Hulu Junior High schools, which is located on Jl. Education, Hamlet IV, Tanjung

Village, Koto Kampar Hulu District, Kampar District, Riau Province. The population of this study was all Class VIII students at the 1st Koto Kampar Hulu Middle School. Samples for this study were drawn using the objective sampling technique. Targeted sampling is determining the sample from a particular point of view (Sugiyono 2012).

## RESULT AND DISCUSSION

### Research result

#### 1. Instrument validation

The research instrument that will be evaluated is evaluated for validity with an expert validator after that it is evaluated on students who have studied the material. Respondents who participated in the test items of this study were 21 students of class IX B with the number of questions to measure student learning outcomes. After the trial phase, the validity test was conducted, out of fifty-eight questions and after being tested for validity, the results obtained were only 28 questions which were declared valid. After assessing the validity, the research instrument was assessed for reliability using the kr-20 formula with the help of Excel with the criteria for the level of reliability relationship in table 2 below.

**Table 2.** Reliability relationship lev

Correlation coefficient	Reliability criteria
0.70-1.00	high
0.50-0.70	Currently
0.00-0.50	Low

The correlation coefficient of the reliability trial in this research instrument was 0.62 with moderate criteria.

#### 2. Data description

The science learning process at 1 Koto Kampar Hulu junior high school, class

VIII is conducted two times face to face a week, the time allocation is 3 x 40 minutes and 2 x 40 minutes. The population in the study were all class VIII at SMP junior high school 1 Koto Kampar Hulu and the sample used was 21 students for the experimental class (VIII B) and 21 students for the control class (VIII A).

In this study, the learning process was conducted for 30 hours of lessons, namely in the chapters on vibrations and waves and chapters on light and optics. In the vibration and wave chapter there are ten indicators of achievement of competence and in the light and optical equipment chapter there are nine indicators.

The implementation of learning is conducted twelve times face-to-face learning, where in each chapter 6 meetings are held. In the control class, learning was conducted using conventional methods, namely the lecture method at each meeting, whereas in the experimental class it was conducted using the practicum method where in each chapter there were four practicums with a total of eight practicums. After the discussion on vibration and wave material as well as light material and optical devices is completed, a final test is held in the form of multiple choice of twenty questions which have been evaluated for validity, reliability, level of difficulty and differentiability.

Students' posttest scores in science learning in class VIII with the subject of waves and optics, in the control and experimental classes can be seen in Table 3. As follow.

**Table 3.** Posttest score

	highest score	Lowest score
Experiment	50	95
Control	45	90
Mean	67,14	77,86

## 2. Results of data analysis

After the learning process for 12 meetings is completed, a final test will be carried out. Data from the results of this final test will be tested for the level of normality. Based on the results of the normality test of the study data using the Lilliefors test in the control and experimental classes, the value of l count is less than the value of l table, indicating that the final test results are normally distributed, than l table as shown in table 4 below.

**Table 4.** Normality test

	l table score	l count score
Control class	0,1881	0,106163
Experiment class	0,1881	0,107877

After the normality test, the results of the research data were homogeneously conducted. Based on the results of the homogeneity test using Fisher's test, the research data is homogeneously distributed, where the calculated F value is smaller than the F table as shown in Table 5.

**Table 5.** Homogeneity Test

	Variable 1	Variable 2
Mean	77.85714	67.142857
Variance	188.9286	116.42857
Observations	21	21
Df	20	20
F	1.622699	
P(F<=f) one-tail	0.143679	
F Critical one-tail	2.124155	

Based on the results of normality and homogeneity tests, the study data were found to be normally distributed and uniform. Therefore, we tested the hypothesis. Assess

the hypothesis using the t test because the data meets statistical assumptions, namely the data is normally distributed, and the variance of the data is homogeneous. The results of statistical testing using the t-test can be seen in table 6 below.

**Table 6. hypothesis test results**

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	77.85714	67.14285
Variance	286	714
Observations	188.9285	116.4285
Pooled Variance	714	714
Hypothesized Mean Difference	21	21
Df	152.6785	714
t Stat	2.809757	435
P(T<=t) one-tail	0.003818	023
t Critical one-tail	1.683851	013
P(T<=t) two-tail	0.007636	045
t Critical two-tail	2.021075	39

Table 6. Shows a t-score of 2.809 and a t-table value of 1.638. This indicates that the t count is larger than the t table. This means that the null hypothesis is rejected, and the alternative hypothesis is accepted. It can be said that the method of internship influences the learning outcomes of students.

### Discussion

In this study, students were guided to do practicum according to the procedures contained in the worksheets that had been provided. Classes are divided into four groups of five to six students in each group. Each group uses a set of practicum tools found in the laboratory. During observation activities, the teacher acts as a guide and

facilitator, then students are directed to report data obtained from observations and make conclusions, then link these data with existing theory. After all learning activities have been completed, data collection will be carried out. Data collection in this study was performed by administering a 20-question final test in the form of multiple-choice questions.

Based on the results of the analysis of the research data that has been conducted, it is found that the use of the practicum method in learning science at junior high school 1 Koto Kampar Hulu has a positive effect on student learning outcomes. The average value of student learning outcomes using the practicum method and conventional methods are 77.86 and 67.14, respectively. This happens because students who use the practicum method are more active in learning than students who study only with conventional methods. According to Anwar (2020) using the practicum method in student learning can increase motivation to develop knowledge by experiencing and observing the learning process directly, to build student knowledge and make learning more meaningful.

The results of this study are in line with research conducted by Sulfiyah and Cahyaningsih (2021), that learning using the practicum method has a positive effect on learning achievement because the practicum method can provide learning conditions that can develop thinking skills and creativity optimally. Therefore, the practicum method can improve student learning achievement through exploring the knowledge possessed and then applying it in everyday life, so that students will more easily remember the lessons they experience themselves.

Research conducted by Ismawati et al. (2020) regarding "Application of the Practicum Method in Learning Science on the Topic of Growth and Development to Improve Learning Outcomes of Middle School Students". The results showed that the learning outcomes of students who were taught using the practicum method using coconut water as a source of plant nutrition were very high. In this study, there were high experimental class learning outcomes, high student learning outcomes due to the activeness of students during the learning process.

In this study, when conducting practicum students were faced with direct observing activities, namely in several practical activities such as observing the vibrations of the pendulum, observing the application of the properties of light, observing the process of forming light in lenses and mirrors, and so on. Students are directly confronted with the object they are studying, so that this process will be more embedded in the student's nerve cell memory than learning only from the theory in the book. According to Hasmiati et al. (2017), in learning with the practicum method students are invited to conduct experiments and be able to interact directly with the environment because learning science students are expected to be able to get to know the natural surroundings.

Based on the results of the field that the application of practical method-based learning is more effective in improving students' thinking skills in vibration and wave material as well as light material and. This is in accordance with the expression of Oktaviana (2015), that using the practicum method can support students in understanding learning material. This happens because students are required to

conduct experiments, observations, and discussions related to material and experiments that have been carried out with other students in groups. The series of activities conducted by students during practicums makes it easier for students to remember and understand the material being taught. (Fitri, 2018)

## CONCLUSION

Based on the research data analyzed, the results can be concluded that using hands-on practice methods in science learning for Grade VIII 1 Koto Kampar Hulu Junior High Schools can improve student learning outcomes. This is evidenced by the high average scores after testing. The experimental class was 77.86 while the control class was only 67.14. The increase in learning outcomes with this placement method is significant, as evidenced by an effect size value of 0.84, which falls into the high category.

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