

## OPTIMALIZATION OF SCIENCE LABORATORY TO IMPROVE THE INTEREST OF STUDY FOR STUDENTS IN SMP-IT IQRA' MEDAN

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### Abstrak

Laboratorium merupakan sarana yang sangat penting keberadaannya di satuan pendidikan dasar dan menengah. Laboratorium dengan aktivitas praktikumnya dapat membantu pemahaman siswa terhadap konsep yang dipelajarinya di kelas sehingga meningkatkan minat belajar siswa terhadap sains. Salah satu kompetensi dalam proses belajar mengajar adalah kemampuan siswa memecahkan masalah di kehidupan sehari-hari. Ini bisa tercapai dengan bantuan laboratorium beserta alat peraga yang tersedia di sekolah. Kemampuan psikomotorik siswa akan terasah dalam memecahkan masalah-masalah yang berkaitan dengan konsep sains. Kegiatan pengabdian kepada masyarakat ini dilakukan dengan beberapa metode yaitu survey awal terhadap permasalahan mitra, merancang alat peraga dan peralatan praktikum, praktikum sederhana di laboratorium dan membuat buku penuntun praktikum. Pada kegiatan praktikum di laboratorium diperoleh nilai pre- test dengan rata-rata 51,38 dengan nilai tertinggi 70 dan terendah 20. Sedangkan nilai post-test memiliki rata-rata 79,31 dengan nilai tertinggi 100 dan terendah 30. Hasil pre-test dan post-test ini menunjukkan adanya kenaikan nilai rata-rata siswa sebesar 54,36%.

**Kata Kunci:** Alat Peraga Laboratorium, Minat Belajar, Kenaikan Nilai Siswa.

### Abstract

Laboratories are very important in primary and secondary educational levels. Laboratories with practical activities can help students understand the concepts they have learned in class so as to increase their learning interest in science. One of the competencies in the learning process is the ability of students to solve problems in their life. This can be achieved with the help of laboratories and teaching aids available at the school. The psychomotor abilities of students will be honed in solving problems related to science concepts. Community service activities are carried out by several methods, the initial survey of partner problems, designing teaching aids and practicum equipment, simple practicum in the laboratory and making a practical guidebook. In the lab activities in the laboratory, the pre-test value was obtained with an average of 51.38 with the highest score was 70 and the lowest was 20. While the post-test score had an average of 79.31 with the highest score was 100 and the lowest was 30. The pre-test and post-test results showed an increase in the average value of students by 54.36%.

**Key words:** Laboratory Aids, Learning Interest, Increase Student Value

## INTRODUCTION

In the National educational system, the instructional objectives of learning are formulated in competencies, which are abilities that must be achieved after students have experience in the learning process in certain educational levels. Badan Standar Nasional Pendidikan (BSNP) formulates that the graduate competency standard of the educational level is the qualification of the ability of the graduate that includes knowledge, attitudes and skills consisting of the basic educational level (SD/ MI/ SDLB/ Paket A, SMP/ MTs/ SMPLB/ Paket B) and secondary educational level (SMA/ MA/ SMALB/ Paket C, SMK/ MAK) (Sanjaya, 2008). One of the graduate competency standards of each educational level is to demonstrate problem solving skills in their daily life.

In assessing student competence, not only assessing cognitive aspects, but also assessing effective and psychomotor aspects. Psychomotor assessment is a physical activity to measure a cognitive ability (Shirran, 2008). This assessment of physical activity can be seen with the support of school facilities such as laboratories. The laboratory has an important role in the teaching and learning process. The concept from the teacher in the class can be understood well by direct observation of natural phenomena through activities in the laboratory. Activities that occur in the laboratory is called practicum. This practicum activity is usually accompanied by a question and answer session between the teacher and students who do the practicum. This practice can detect whether students have misconceptions about the concepts that have been taught by teachers in the class (Suparno, 2005).

According to W.J.S. Poerwadarminta, laboratory is a place to conduct experiments (investigations and so on) everything related to physics, chemistry and so on. While laboratory staff are people (chemists and so on) who work in laboratories (Emha, et al., 2002). Laboratory is one of the facilities that must be provided by school organizers to support learning activities. The equipment in the laboratory consists of teaching aids. The teaching aids are natural and artificial physical vehicles carrying learning material. The teaching aids in a limited sense is a tool for

teaching science and mathematics in the learning process in SD, SMP or SMA.

Practicum is one manifestation of scientific work in learning. Salirawati (2011) explains that practicum activities are experiments that are displayed by the teacher in the form of demonstrations, cooperative demonstrations by a group of students, as well as experiments and observations by students. These activities can take place in a laboratory or elsewhere. Trisnawati (2011) suggested that practicum activities run according to the main goals, requiring adequate laboratory facilities and a relevant teaching material, including of a practical guidebook. Practical instructions are needed so that practicum activities can run smoothly, the main goal can be achieved, and must contain work safety to minimize the risk of accidents that may occur and others.

One of primary level school in Medan City is SMP Swasta Islam Terpadu (SMPIT) IQRA'. SMPIT IQRA' is located on Jalan Bilal Gg Makmur, Lingkungan I kelurahan Sari Rejo, Medan Polonia District, Medan City, North Sumatra Province. At present SMPIT IQRA' has 95 students consisting of four classes, class VII A and B, VIII and IX. However, this school does not have a science laboratory as a comprehensive learning tool yet. For this reason, the community service activities aim to optimize the science laboratory by providing simple practicum tools and holding simple practicum-based learning to increase their learning interest.

## METHOD OF ACTIVITY

The methods for implementation of community service activities are:

- a. The initial survey, which is a review of the location of the partner by digging up the informations about what facilities that the school already has as well as what is not yet and the needed of the school to support the teaching and learning process. So that the goal of national education which is achieving student competence can be realized.
- b. Providing of teaching aids and supporting practicum in the laboratory. In this stage, the implementation team discusses what things will be provided to support school laboratory facilities and facilitate the

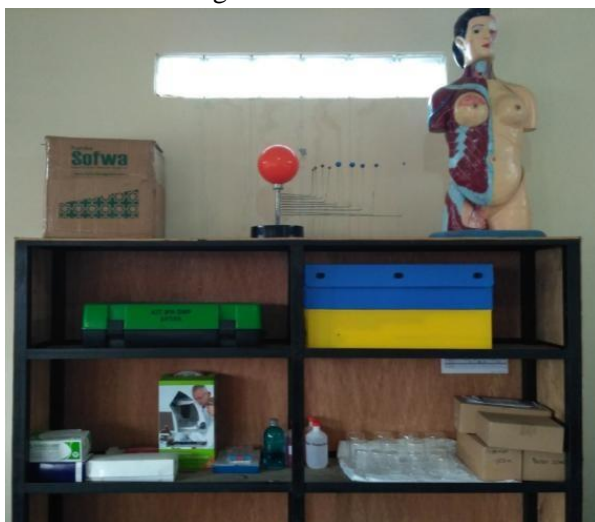
teaching and learning activities.

- c. Simple practicum in the laboratory. In this stage, students will be given a pre-test and post-test before the practicum is conducted. This activity is intended to see student's learning interest by a simple practicum method with an increase in post-test results compared to the pre-test
- d. Making a simple practical guidebook in a science laboratory. In this stage the implementing team composes and designs a simple practical guidebook that is suitable with the topic of learning in SMP Swasta Islam Terpadu IQRA' Medan.

## RESULT AND DISCUSION

First, the community service team conducted an initial survey directly into SMP Swasta Islam Terpadu IQRA' in Jalan Bilal Gg Makmur, Lingkungan I, Sari Rejo, Medan Polonia District, Medan. The team discussed with partners about laboratory rooms and laboratory equipment that the school already had and needed.

After that, the team gave the science laboratory teaching aids and gave several posters to be put in the laboratory. These science lab teaching aids include KIT mechanics, electric KIT, measuring cup, beaker, enlemeyer, litmus paper, pH indicator solution, etc. The teaching aids given to schools can be seen in Figure 1.



**Figure 1.** Laboratory equipment from the Community Service Team

Furthermore, the Team conducted a socialization of the use of laboratory equipment by providing science materials and doing simple lab work. The subject chosen is Acid and Base Solution. The team explained about solutions, the properties of solutions, acids and bases and examples in daily life. This activity can be seen in Figure 2.



**Figur 2.** Sosialization of Using Laboratory Equipment

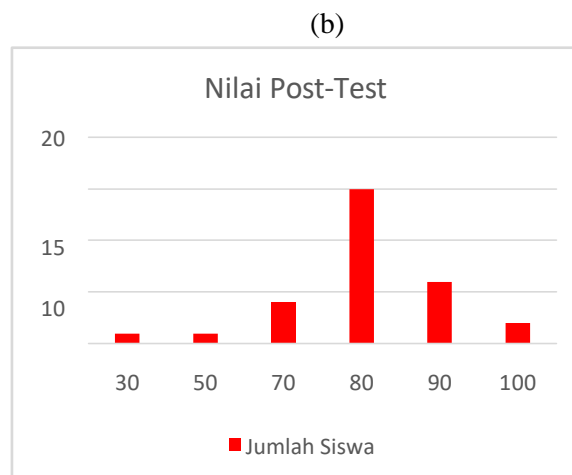
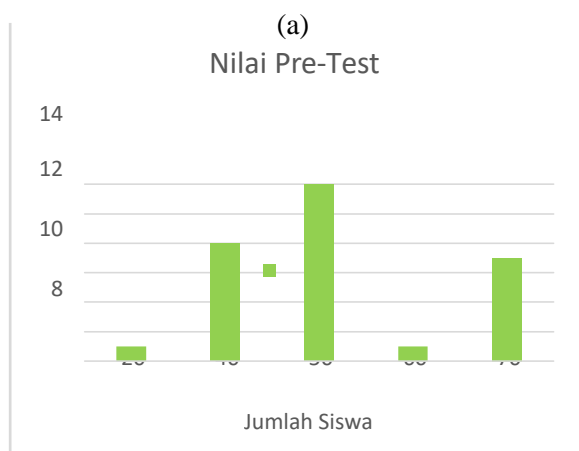
To find out the learning interest of student increases through simple practicum methods in the laboratory, the Team makes a pre-test and post-test. Students were given a pre-test question about 10 acid and base solutions. After being given a pre-test the Team explained the material about acid and base solutions by carrying out a simple experiment using a solution of drinks around the students. All students were very enthusiastic about doing this simple experiment. None of these students were silent and did not pay attention. Students work with their respective groups. This activity can be seen in Figure 3.



**Figure 3.** A simple experiment activity in laboratory

After a simple experiment in the laboratory, students are given a post-test question to measure student's understanding of acid and base solutions. This post-test question also consists of 10 questions which are different from the pre-test questions. The results of the student's pre-test and post-test can be seen in Figure 4 (a and b).

From the diagram in Figure 4, there is an increase in score of students. At the pre-test, the average score of students was 51.38 with the highest score was 70 and the lowest was 20. While the post-test score had an average of 79.31 with the highest score was 100 and the lowest was 30. Results of the pre-test and post-test shows an increase in the average value of students by 54.36%.



**Figure 4.** (a) Pre-test result dan (b) Post-test result of studentin acid and base solutions

The requirement for a practical guidebook is one of the supporting factors for laboratory success. For this reason, the community service team made a simple science lab guidebook in the laboratory. This guidebook will be used by students during teaching and learning activities in the laboratory.

## CONCLUSION

From this activity, it can be concluded that the presence of teaching aids in the laboratory is very much needed because it can make it easier for students to understand the theories taught by the teachers while in the class and attract the interest of learning in the field of science. The results of this activity indicate an increase in the average value of students by 54.36% from the average pre-test value 51.38 and post-test 79.31.

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