

Introduction Of Laboratory Tools And Their Benefits For Student In The Chemistry Laboratory (Performance Aspect)

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Abstract: *The introduction of laboratory tools is very important in starting a practicum. The introduction of laboratory tools helps in knowing the name of laboratory tools and their function in practicum. Not only that, the introduction of laboratory tools is also useful in avoiding work accidents and failed experiments in the laboratory. The introduction of laboratory tools also aims to provide students with an understanding of laboratory tools in the chemistry laboratory of Universitas Negeri Padang. The chemical laboratory of Universitas Negeri Padang has a fairly regular spatial arrangement, with sufficient laboratory equipment, but a with a lack of student knowledge about laboratory equipment causes less effective in practicum. Based on the results of observations and research, it is expected that the chemistry laboratory of Universitas Negeri Padang can meet laboratory standards and be placed in a strategic place more effectively. in carrying out chemical practicums. The introduction of chemical laboratory tools is also expected to be able to increase students' insights about the function of chemical laboratory tools so that experiments will be conducted in practicum can run smoothly*

Keywords—laboratory equipment, practicum, chemistry laboratory

1. INTRODUCTION

Before practicum in the laboratory, as a practice we must know the various laboratory tools as the first step in starting practicum. The introduction of laboratory tools is very important for the smooth running of the experiments to be carried out.

Laboratory equipment can usually be damaged or even dangerous if it is not in accordance with the procedure of use. Therefore, understanding the function and workings of equipment and materials must be absolutely mastered by practicants before practicum in a chemical laboratory.

The introduction of laboratory tools before starting practicum will make it easier for practice to know the name of each laboratory tool and how it is used and its function in the practicum. The introduction of laboratory tools is also useful in avoiding work accidents and the failure of practicum experiments in the laboratory

2. RESEARCH METHODS

The research method uses observational methods and qualitative methods where the author makes observations in the chemistry laboratory with chemistry education students at Universitas Negeri Padang, at the time of practicum of acid-base chemistry by conducting neutralization titration experiments, hydrate water experiments, and stoichiometric experiments.

The introduction of laboratory tools is reviewed from observations of experiments conducted by chemistry education students in neutralization titration, water hydrate, and stoichiometry with a variety of laboratory tools used.

3. RESULTS AND DISCUSSIONS

From observations, observations, and practicums that are directly carried out in the laboratory, here are laboratory tools that are commonly used in chemical practicums in the laboratory.

1. Erlenmeyer Flask

Pyrex glass, cone shape, some are narrow-mouthed and some are wide-mouthed, with a scale of two or more with a capacity of 50 ml, 100ml, 250 ml, 500 ml, 1000 ml, 2000 ml that serves to store, heat or mix chemical compounds, and the scale unit is not very thorough but sufficient for use that does not require high precision.



Fig 1. Erlenmeyer Flask

2. Volumetric flask

Pumpkin with *polypropylene* cap that serves as a place to store the extraction results and as a place to dilute the solution.



Fig 2. Volumetric flask

3. Beaker glass

Pyrex glass with a low and high shape, space and scale lips that serve to store, heat, and mix chemical compounds with scale units that are not very thorough but adequate for use that does not require high accuracy.



Fig 3. Beaker Glass

4. Measuring cylinder

With pour lips and the shape of the hexagonal foot that serves to measure the volume of a liquid as needed with high accuracy.



Fig 4. Measuring cylinder

5. Eye Dropper

Serves to take and move liquids of a certain volume.



Fig 5. Eye Dropper

6. Volume pipette

Serves to take and move liquids of a certain volume.



Fig 6. Eye Dropper

7. Measuring pipette

Serves to take and move liquids on a certain scale.



Fig 7. Measuring pipette

8. Analytical balance sheet

Serves to weigh the substances to be weighed on a small scale.



Fig 8. Analytical balance sheet

9. Mortar and pestle

Made of porcelain material that serves to erode and smooth solids or materials that are still in the form of crystals.



Fig 9. Mortar and pestle

10. Watch glass

Pyrex glass that serves to place objects to be weighed.



Fig 10. Watch glass

11. Gauze wire

Iron wire is used for heating base.



Fig 11. Gauze Wire

12. Glass funnel

Made of *pyrex* material used for the process of filtering



Fig 12. Glass Funnel

13. Burette

Used at the time of titration, but in certain circumstances can also be used to measure the volume of a solution.



Fig 13. Burette

14. Retord stand with clamp

As a place for the installation of clamps when titration.



Fig 14. Retord stand with clamp

15. Thermometer

Scale with degrees Celsius, which serves as a temperature gauge of a chemical compound (liquid) or an incubator room.



Fig 15. Thermometer

16. Petri dish

Made from *pyrex* material, it serves as a place of breeding bacteria or the manufacture of media cultures.



Fig 16. Petri dish

17. Washing Bottle

Serves to clean the surface of the tool that still lags behind the chemicals attached to the surface



Fig 17. Washing Bottle

4. CONCLUSIONS AND SUGGESTIONS

The introduction of laboratory tools is very important in initiating a practicum as an effort in the proper use of laboratory tools. In addition, the introduction of laboratory tools plays an important role in avoiding work accidents and failed experiments during practicum

Based on observations, observations, and practicums directly in the chemistry laboratory at Universitas Negeri Padang, most chemistry education students have been able to

know the name of laboratory equipment and understand the use of laboratory tools. It's just that the less strategic laboratory performance makes the performance of chemical education students a little hampered and the facilities that I have adequate make chemistry education students a little difficult in practicum so that it takes quite a long time in one experiment.

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6. REFERENCES

- [1] Wirjosoemarto, Koesmadji, dkk. Teknik Laboratorium. Buku revisi, Fakultas Pendidikan Matematika dan Ilmu pengetahuan Alam Universitas Pendidikan Indonesia