Korelasi antara Kelengkapan Alat dan Bahan Laboratorium dengan Keterampilan Praktikum Kimia dan Prestasi Belajar Peserta Didik Kelas XI Semester Genap Tahun Ajaran 2015/2016 Di SMA Negeri 1 Sleman

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ABSTRAK

Penelitian ini memiliki tujuan untuk mengetahui 1) Kelengkapan alat dan bahan laboratorium kimia di SMA Negeri 1 Sleman, 2) Keterampilan praktikum kimia, 3) Prestasi belajar peserta didik, 4) Korelasi kelengkapan alat dan bahan laboratorium kimia dengan keterampilan praktikum, 5) Korelasi kelengkapan alat dan bahan laboratorium kimia dengan prestasi belajar, 6) Korelasi keterampilan praktikum dengan prestasi peserta didik kela XI MIA materi pembelajaran titrasi asam basa.

Penelitian ini menggunakan metode penelitian deskriptif. Populasi penelitian ini adalah peserta didik kelas XI MIA di SMA Negeri 1 Sleman. Sampel penelitian ini adalah peserta didik yang diambil dari keseluruhan peserta didik kelas XI MIA dengan *purposive sampling*. Kelengkapan alat bahan laboratorium diperoleh menggunakan daftar cek. Keterampilan peserta didik diperoleh menggunakan lembar observasi dan angket penilaian diri dan dianalisis dengan kriteria sedangkan prestasi belajar diperoleh dari nilai ulangan harian peserta didik pada materi titrasi asam basa. Metode analisis data yang digunakan adalah dengan analisis kualitatif yaitu dengan menggunakan kriteria dan kuantitatif yaitu dengan mengunakan *korelasi product moment*.

Hasil penelitian ini menunjukkan bahwa kelengkapan alat dan bahan laboratorium termasuk dalam kriteria Lengkap, keterampilan berkriteria Terampil dan prestasi belajar berkriteria Baik. Kelengkapan alat dan bahan laboratorium juga berkaitan dengan keterampilan dan prestasi belajarpeserta didik. Uji korelasi menggunakan *korelasi product moment* untuk hubungan antara keterampilan dengan prestasi belajar, menunjukkan bahwa keduanya tidak memiliki hubungan (tidak berkaitan) karena nilai r hitung (r_{xy} = 0,217) lebih kecil dari r tabel (r tabel = 0,2732).

Kata kunci : laboratorium kimia, keterampilan, prestasi belajar

Correlation between Completeness of Laboratory Tools and Materials toward Chemistry Practical Skills and The Study Achievement of Students Grade XI Semester-Even Year 2015/2016 in SMA Negeri 1 Sleman

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ABSTRACT

This research has the aims to know 1) The completeness of laboratory tools and materials, 2) Chemistry practical skill of the students, 3) Study achievement of the students, 4) Correlation of completeness of laboratory tools and materials with chemistry practical skill, 5) Correlation of completeness of laboratory tools and materials with study achievement of the students, 6) Correlation chemistry practical skill with study the achievement of the students grade XI of Science Class in the topic of acid base titration.

This research uses descriptive method. The population in this research is the students of grade XI Science Class in SMA Negeri 1 Sleman The sample of this research is the students came from two classes of all the students grade XI Science Class in SMA Negeri 1 Sleman which is selected by *purposive sampling*. The completeness of laboratory tools and materials is obtained by using checklist. The student skill is obtained by using observation sheet and self-assessment questionnaire which are analyzed by criteria. The student achievement is obtained by using the score of the daily test of the student in the topic of acid base titration. The data obtained in this research are analyzed by qualitative analysis which is by criteria and quantitative analysis which is *product moment correlation*.

The result of this research is shows that the completeness of laboratory tools and materials in SMA N 1 Sleman is in the criteria of Complete. The criteria of the practical skill of the student is Skilled and the criteria of study achievement is Good. That completeness of laboratory tools and materials are related to the student practical skill. Moreover, That completeness of laboratory tools and materials are related to the study achievement of the student. The correlation test using *product moment correlation* shows that both student skill and study achievement have no correlation because the value of counted r (r_{xy} = 0,217) is smaller than r table (r tabel = 0,2732).

keywords : chemistry laboratory, skill, achievement of study

CORRELATION BETWEEN COMPLETENESS OF LABORATORY TOOLS AND MATERIALS WITH CHEMISTRYPRACTICAL SKILLS AND THE STUDY ACHIEVEMENT OF STUDENTS GRADE XI SEMESTER-EVEN YEAR 2015/2016 IN SMA NEGERI 1 SLEMAN

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Abstrak

Penelitian ini memiliki tujuan untuk mengetahui 1) Kelengkapan alat dan bahan laboratorium kimia di SMA Negeri 1 Sleman, 2) Keterampilan praktikum kimia, 3) Prestasi belajar peserta didik, 4) Korelasi kelengkapan alat dan bahan laboratorium kimia dengan keterampilan praktikum, 5) Korelasi kelengkapan alat dan bahan laboratorium kimia dengan prestasi belajar, 6) Korelasi keterampilan praktikum dengan prestasi peserta didik kela XI MIA materi pembelajaran titrasi asam basa.

Penelitian ini menggunakan metode deskriptif. Populasi penelitian ini adalah peserta didik kelas XI MIA SMA Negeri 1 Sleman dan sampel penelitian ini adalah peserta didik yang diambil dari keseluruhan peserta didik kelas XI tersebut dengan *purposive sampling*. Instrumen yang digunakan adalah daftar cek, lembar observasi, dan angket penilaian diri. Prestasi belajar diperoleh dari nilai ulangan harian peserta didik. Metode analisis data yang digunakan adalah dengan analisis kualitatif dan kuantitatif.

Hasil penelitian ini menunjukkan bahwa kelengkapan alat dan bahan laboratorium termasuk dalam kriteria Lengkap, keterampilan berkriteria Terampil, dan prestasi belajar berkriteria Baik. Kelengkapan alat dan bahan laboratorium juga berkaitan dengan keterampilan dan prestasi belajarpeserta didik. Uji korelasi menggunakan *korelasi product moment* untuk hubungan antara keterampilan dengan prestasi belajar, menunjukkan bahwa keduanya tidak memiliki hubungan (tidak berkaitan) karena nilai r hitung (r_{xy} = 0,217) lebih kecil dari r tabel (r tabel = 0,2732).

Kata kunci : laboratorium kimia, keterampilan, prestasi belajar,

Abstract

This research has the aims to know the completeness of laboratory tools and materials in SMA N 1 Sleman and the correlation of those completeness toward chemistry practical skills and the study achievement of students grade XI of Science Class in the topic of acid base titration. This research is also concern about the correlation between chemistry practical skills and the study achievement of students grade XI of Science Class in the topic of acid base titration.

This research uses descriptive method. The population is the students of grade XI MIA Semester-Even Year 2015/2016 in SMA N 1 Sleman and the sample is the students came from two classes of all the students grade XI which is selected by *purposive sampling*. The instruments are checklist, observation sheet, and self-assessment questionnaire. The student achievement is obtained by using the score of the daily test. The data obtained in this research are analyzed by qualitative and quantitative method of analysis data.

The result of this study shows that the completeness of equipment and materials of chemistry laboratory includes in the Complete criteria. The criteria of the practical skill of the student is Skilled and the criteria of study achievement is Good. That completeness of laboratory tools and materials are related to the student practical skill. Moreover, That completeness of laboratory tools and materials are related to the study achievement of the student. The correlation test using *product moment correlation* shows that both student skill and study achievement have no correlation because the value of counted r (r_{xy} = 0,217) is smaller than r table (r tabel = 0,2732).
Keywords: chemistry laboratory, skill, study achievement

INTRODUCTION

There are many chemical phenomena that can be found in everyday life which can be explained by a scientific method so that the phenomenon can be proven empirically and rationally.

The scientific method is a way to acquire scientific knowledge. Scientific knowledge can be acquired/invented by taking a series of specific procedures. Those procedures must be followed carefully in order to get the right conclusion. The scientific method also can be regarded as a combination of rationalism and empiricism. Those ways of rational and empirical

thinking are reflected in the procedures or steps that are in the process of the scientific activities [1].

In chemistry, the scientific method is closely associated with the activities of experiments conducted in the laboratory. An error can be reduced by taking additional measurements or replacing the experimental tools, but errors can't be eliminated completely [2].

Experimental activity can be found in high school in the form of practicum. Acid Base Titration is one of the topics taught to students at the high school level. Students are expected to have skills in performing acid-base titration after carrying out laboratory work in this topic. Indicators skills of the students and the aim of acid base titration are expected to be achieved with the complete tools and materials of the laboratory. Direct experience gained by students through the practicum is expected to increase the understanding of the students on this topic so that it can results a good study achievement.

This research has the aim to know the completeness of laboratory tools and materials in SMA N 1 Sleman and the correlation of those completeness toward chemistry practical skills and the study achievement of students grade XI of Science Class in the topic of acid base titration. Besides, this research is also concern about the correlation between chemistry practical skills and the study achievement of students grade XI of Science Class in the topic of acid base titration.

Learning by Sudjana [3] is every deliberate effort by educators that can cause the students to do learning activities. Gulo [3] describes learning as an effort to create a system that optimizes learning environment. Nasution [3] describes learning as an activity to organize or manage the environment as well as possible and then it is being connected with students so there will be a learning process. Environment in this case includes not only classrooms, but also includes teachers, props, libraries, laboratories, etc. which related to student learning activities.

Arifin et al. [4] explains briefly about the management of

simple chemistry laboratory which related to the chemistry learning process in high school, covering the elements, characteristics, and management of chemistry laboratories.

According to Gagne [5], learning is a complex activity. Results of the learning are the capability. According to Gagne, once learned, one can have the skills, knowledge, attitudes, and values. Therefore, learning is a set of cognitive processes that transform environmental stimulation, passing information processing, becomes the new capabilities.

Based on the opinion of some experts about the notion of learning, Syaiful Sagala [6] defines learning as a process of change in behavior or a private person based on certain practice or experience.

Achievement ability or demonstrates of learning outcomes by Dimyati and Mudjiono [5] is the culmination of a process of students. Students prove their success in learning at this phase or stage.

Exam is performed to determine the learning success of students. Exam, according to Uno [7], has three functions which are to measure, assess, and evaluate. The results of the exam are generally expressed in numbers scores or grades of the students in answering the questions.

Practicum conducted in this study is the acid-base titration. Titration according Harjadi [8] is a solution which is added from a burette little by little, until the number of substances which reacted right becomes equivalent to one another. While the acid-base titration or often called acidimetry-alkalimetry is a measurement of the amount of acid or base or measurements with acids or bases.

RESEARCH METHOD

This research uses descriptive method. The first thing to do in this study is to analyze the completeness tools and materials chemistry lab at SMA N 1 Sleman. The analysis is based on the completeness of standards or criteria established by BSNP (Badan Standar Nasional Pendidikan or The Department of Education National Standard) [9] and

Fajri [10] which are then categorized by the ideal conversion guidelines. The instrument used is a check list that contains a list of tools and materials. If the completeness of lab tools and materials have been determined then the students as respondents carry out a practicum with the topic Acids Bases Titration and then fill out a questionnaire which contains about students difficulties in the uses of lab tools and materials properly. Observation skills is carried out directly during practicum by the observers to determine the skills of learners in the lab. Observation skills of students use observation sheet instruments and scoring rubric. Learning achievement of students is obtained from the score of daily tests of students in chapters or topics similar to those used on the observation skills. The results of the final score of the questionnaire, the daily tests, and also observation sheets are categorized based on the ideal conversion guidelines. The data obtained were analyzed using simple statistical analysis to find correlations between variables. Correlation between practicum skills and learning achievement of students were analyzed by using the product moment correlation r adapted from Suharsimi [11].

RESULTS AND DISSCUSSIONS

The completeness of equipment and materials in chemical laboratories SMA N 1 Sleman can be obtained by checklist. Each piece of equipment on the check list of the completeness of equipment were scored by giving a score of 1 for tools that meet the criteria of a chemical laboratory instruments and a score of 0 for tools that do not meet the criteria. Based on the scoring, then, it have been obtained that a total score for the completeness of equipment is 49 out of 77 so that the the completeness of equipment is "Complete". Scoring on the completeness of the tool also applies to the completeness of materials chemistry laboratory. Based on the results of the scoring, it have been obtained that the total score of the completeness of materials chemistry laboratory is 73 out of a maximum total score of 93 so that the completeness of materials chemistry

laboratory is Complete. The total value of the completeness of the tools and materials chemistry lab in SMA N 1 Sleman is calculated by adding completeness of equipment and completeness of material value, so the values obtained with appropriate equipment and materials amounted to 122. Based on the assessment criteria with appropriate equipment and laboratory materials, it can be said that the complteness of equipment and materials chemistry lab in SMA N 1 Sleman included in the criteria Complete.

During practicum, four observer observed several indicators skills which were done by students and give a score to each activity at each of the indicators were observed. Scoring is based on a rubric to minimize the difference in perspective on the skills assessment of students. Scoring by the observer uses observation sheets practical skills of students. The scoring skills of students have a range of scores from 1 to 5. Thus, the average value of the sample obtained ($\bar{X}$) is 49.615. Based on the assessment criteria on the observation sheet, the skills of students in class XI MIA SMA N 1 Sleman in chemical lab acid-base titration of material include in the criteria of Skilled.

After the students carry out lab work, students also fill out a self-assessment questionnaire containing 20 pieces statement. The statement is self-measurement of each students on their individual skills of students in carrying out several activities in the lab. The average value obtained is 72.673 ($\bar{X}$ = 72.673). Based on the assessment criteria for self assessment sheet students skills, the skills of students in class XI MIA SMA N 1 Sleman in chemical lab acid-base titration of material include in the criteria of Skilled.

Student achievement is taken from the daily tests of samples of learners class XI MIA SMA N 1 Sleman on the material acid-base titration. The maximum value that can be obtained is 100. In 52 samples of students in class XI MIA SMA N 1 Sleman, the average value is 77.173 ($\bar{X}$ = 77.173). Based on the assessment criteria for the Achievement of Students Grade XI MIA SMA N 1 Sleman Material

Titration Acid Base, it can be said that the achievement of students in class XI SMA N 1 Sleman MIA acid-base titration of material included in Good criteria.

The results of analysis of variables with completeness of equipment and materials laboratory with the skills of students in class XI MIA SMA N 1 Sleman show that completeness of equipment and materials laboratory is linked with the skills of students in class XI MIA SMA N 1 Sleman. The completeness of laboratory equipment and materials in SMA N 1 Sleman is also linked with study achievement of students. But, the practical skills of students in class XI MIA SMA N 1 Sleman is not linked with the study achievement based on *product moment correlation* analysis.

CONCLUSIONS

Overall completeness of equipment and materials chemistry lab in SMA N 1 Sleman include in the criteria of "Complete". Skills students of class XI MIA SMA N 1 Sleman in chemical lab materials acid-base titration include in the criteria of " Skilled. The learning achievement of students in class XI MIA SMA N 1 Sleman on acid-base titration of material include in the criteria of Good. Completeness of equipment and materials chemistry laboratory in SMA N 1 Sleman has no relation with the skills of students in class XI MIA SMA N 1 Sleman (in conducting lab acid-base titration). Completeness of equipment and materials chemistry lab at the high school SMA N 1 Sleman is also linked with the study achievement of student class XI MIA SMA N 1 Sleman. But, in correlation test using Product Moment Correlation, skills and learning achievement of students in class XI MIA SMA N 1 Sleman material acid-base titration is not linked each other.

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