

Management Analysis of the Uhamka Physics Laboratory in Jakarta: Evaluation of Planning, Organizing and Maintenance



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ABSTRACT: This research aims to determine laboratory management in physics learning at FKIP UHAMKA Jakarta. This research is a qualitative descriptive study. This research was conducted at the UHAMKA Physics Laboratory, Jakarta. Data collection methods include observation, interviews and documentation. Data analysis techniques consist of data reduction, data presentation, and drawing conclusions. The results of the research show that laboratory planning is not yet good, because there are overlapping duties and responsibilities. From the results of interviews, the organization of the laboratory has not been carried out well because there is no laboratory assistant specifically assigned to take care of it, so far the person in charge of the laboratory also doubles as a lecturer so that the laboratory does not managed well, maintaining laboratory cleanliness has been said to be good. No dust sticks to the practice table and equipment. Students are involved in maintenance by cleaning practical equipment before and after learning. Maintenance of practical equipment is carried out periodically as stated by Mr. SG, the last stage is supervision, which aims to monitor and control laboratory management from various aspects, be it supervision of equipment and materials, laboratory users or supervision of human resources or management staff.

KEYWORDS: Management, Physics Laboratory, Evaluation, organizing planning, maintenance

INTRODUCTION

Natural science (IPA) is one of the subjects in school and is a branch of science where the objects are natural objects whose truth has been tested through systematic steps which are also called scientific methods (1). Knowledge in the field of science is obtained through learning and proving or knowledge that covers a general truth of natural laws that occur, for example obtained and proven through the scientific method (2). According to Carin, practicum is an inseparable part of physics courses, because physics courses require an understanding of things that students/students did not know before which is proven through practicums, students/students will be given the opportunity to encourage curiosity and the desire to try, so that it is easier for students to understand and understand the material they have received after carrying out experiments in the laboratory (3). For this reason, a good laboratory management system is needed to support practical activities in schools, (4).

Laboratory management is an effort made to manage a laboratory based on standard concepts, namely a well-managed laboratory supported by several factors such as sophisticated laboratory equipment, professional staff and good management and laboratory supervision (4). Laboratory management does not only focus on management, but laboratory management also includes management of laboratory facilities, spatial layout, laboratory organization, inventory. Supported by Sudirman's opinion, good laboratory management is carried out so that the aim of holding a laboratory to support learning can be achieved (4). The better the laboratory management in the school, the better the learning outcomes obtained by students, conversely, if the laboratory management is poorly managed, the learning outcomes obtained by students will also be bad.

According to Nina, there are 4 elements or indicators in laboratory management, namely Planning, Organizing, Maintenance, Supervision (5). Based on Neng Gustini's research regarding Science Laboratory Management to Improve the Quality of Learning, it is necessary to carry out evaluations every semester in the management of science laboratories (6). A good laboratory management has a good organizational system, clear job descriptions, effective, efficient, disciplined use of facilities and good laboratory administration (6). Through practical activities in the laboratory, it is hoped that students can learn and gain direct experience regarding the nature, secrets and natural symptoms of life that cannot be explained verbally. Therefore, laboratories need to be utilized in the learning process so that learning is effective.

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RESEARCH METHODS

This research is a descriptive research. The time for conducting the research is 02 September – 28 December 2023 at the Science Laboratory FKIP UHAMKA, Jakarta. This descriptive research provides a detailed picture to reveal the management of the science laboratory in physics learning. The type of research used in this research is descriptive qualitative. Bogdan and Taylor in Moleong define qualitative methodology as a research process that produces descriptive data in the form of written or spoken words from people and behavior that can be observed Lexy J. Moleong, (7).

The data collection technique used in this research is 1) Interview. The interview technique is used to reveal about the Laboratory management process. This interview is used as a data collection technique to know exactly what information will be obtained. Data collection through interviews has prepared detailed guidelines regarding planning, organizing, recording and monitoring. Interview guidelines are used so that the direction of the interview is focused and there are no deviations regarding the Laboratory management system.

The data analysis technique used in this research is descriptive analysis. Descriptive means that the data obtained from researchers is presented as it is and then analyzed descriptively to get an idea of the facts in the field. Three steps in data analysis, namely: 1) Data reduction. Data reduction is carried out by summarizing, selecting the main things, focusing on the important things, looking for themes and patterns, and removing what is not necessary. 2) Presentation of data. The data that has been compiled from the results of data reduction is then presented in the form of a descriptive narrative. The data presented is then selected, then simplified by taking the basic data needed to answer the problem being studied. 3) Drawing conclusions is done after the data has been collected and presented, then the researcher connects and compares one data with another so that it is easy to draw conclusions as an answer to the problem being studied.

RESULTS AND DISCUSSION

Planning is the first step before carrying out other management functions as an effort to fulfill laboratory infrastructure. According to Handoko, planning is choosing a set of activities and deciding what should be done, when, how, by whom (8). Good planning can be achieved by considering future conditions in the planning period and the activities decided to be implemented, as well as the current period when the plan was made. Based on research results, laboratory planning is not good, because there are overlapping duties and responsibilities. Overlapping duties and responsibilities, that is, if all laboratories are used together, laboratory assistants cannot guide students in using the equipment and supplies in the laboratory.

According to Hasibuan, organizing is a process of determining, grouping and arranging various activities needed to achieve goals, placing people in each activity, providing the necessary tools, determining the relatively delegated authority of the head of each individual who will carry out these activities (9). Organizing requires job descriptions so that the implementation of organizing can run smoothly, stages of organizing. Based on the results of the interview, the organization of the laboratory has not been carried out well because there is no laboratory assistant specifically assigned to take care of it, so far the person in charge of the laboratory also doubles as a lecturer so that the laboratory is not managed well. This situation resulted in some laboratory equipment being damaged and not yet repaired. Good organization includes several managers, including the head of the laboratory and laboratory assistants. Organization is carried out well so that the laboratory runs in accordance with its function and benefits in an effort to support the lecture process.

Maintenance is one aspect that must be carried out in management FKIP UHAMKA Physics laboratory. Based on research results, laboratory cleanliness is said to be good. No dust sticks to the practice table and equipment. Students are involved in maintenance by cleaning practical equipment before and after learning. Maintenance of practical equipment is carried out periodically as stated by Mr. SG. Although maintenance is carried out regularly, but this does not rule out the possibility of damage to the practical equipment. Damage to practical equipment is usually caused by non-compliance with equipment use and usage procedures. This damage resulted in practical learning activities being disrupted so repairs had to be made. The process for proposing repairs to goods is as follows: 1) data collection on damaged goods, 2) submission to the faculty, 3) the faculty adjusts the funds for repairs, 4) if the budget is available then the faculty brings in outside technician for repairs.

The final stage is supervision. Supervision is a component of laboratory management which aims to monitor and control laboratory management from various aspects, be it supervision of equipment and materials, laboratory users or supervision of human resources or management officers. Supervision is an action or activity process to find out the results of implementation, errors, failures, then make improvements and prevent the recurrence of these errors, as well as ensuring that implementation does not differ from the established plan. According to Fattah, supervision is a basic process that is essentially still necessary no matter how complex and extensive an organization is. The basic process of supervision consists of three stages, 1) setting implementation standards, 2) measuring work implementation compared to standards, and 3) determining gaps (deviations) between implementation and standards and plans (10).

Good laboratory management will influence the effectiveness of lectures and skills in practice. The effectiveness of lectures can be achieved if absorption capacity towards the lesson material taught, achieving high achievement both as a group and

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individually. Success in practicum can be achieved if students / students able to practice the theory that has been taught correctly and achieve achievement or satisfactory value.

The results of this research include differences with research conducted by Aritawarni, science laboratory management which includes: (1) Achievement of quality standards for science laboratory layout in improving student achievement; (2) Follow up on the use of science laboratory facilities to improve student achievement; (3) Utilization of science laboratory facilities; (4) Laboratory skills using science laboratory equipment to improve student achievement (11). Another researcher by Arisal Nurhadi, in Laboratory management efforts in efforts improve the quality of learning in schools, how to plan, implement, and evaluation of laboratory management in schools (12). Meanwhile, according to Nuri Dewi Muldayanti's research results, laboratory management is a skill that teachers must have laboratory assistants needed to manage the laboratory to support learning.

CONCLUSION

The results of this research show that there are several stages in physics laboratory management to improve the quality of lectures at FKIP UHAMKA. At the planning stage a good laboratory can be achieved by considering future conditions in the planning period and the activities that have been decided to be carried out, as well as the current period when the plan was made. Organizing requires job descriptions so that the implementation of organizing can run smoothly, stages of organizing. Meanwhile, maintenance is one of the aspects that must be carried out in the management of the FKIP UHAMKA Physics laboratory and finally, supervision is an action or activity process to find out the results of implementation, errors, failures, then make improvements and prevent the recurrence of these errors, as well as ensuring that implementation does not occur. different from the established plan.

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REFERENCES

- 1) Purwati, (2012). Science Subjects. Jakarta: Reneka Cipta
- 2) Decaprio, R. (2013), Tips for Managing School Laboratories, DIVA Press, Yogyakarta.
- 3) Carin. (2005). Science Subjects. Bandung: PT Teen Rosda Karya.
- 4) Sudirman, (2011). The Role of the Laboratory in Science Subjects. Revised Edition. Jakarta: Raneka Cipta
- 5) Nina Adriani. (2016). Analysis of State High School Chemistry Laboratory Management in Tanjungpinang City to Improve Teacher and Student Competence, Zarah Journal, 4 (1), 1-8, <https://ojs.umrah.ac.id/index.php/zarah/issue/view/7>
- 6) Neng Gustini, (2020). Science Laboratory Management to Improve the Quality of Learning, Journal of Islamic Education Management, 5 (2) (2020) 231-244, DOI :10.15575/isema.v5i2.9308 <http://journal.uinsgd.ac.id/index.php/isema>
- 7) Meleow . 2018, Qualitative Research. Jakarta Alfabeta.
- 8) Handoko. T. H. (2003). Management. Yogyakarta: BPFE-Yogyakarta
- 9) Hasibuan. M. S. P. (2013). Basic Management, Definition and Problems. Jakarta: Bumi Literacy
- 10) Fattah. N. (2004). Foundations of Educational Management. Bandung: PT. Rosdakarya Teenager.
- 11) Aritawarni, Muhammad Fadhli, Khairiani, (2023). Science Laboratory Management in Improving Achievement of MTS II Bener Meriah Students, Bandar District, Bener Meriah Regency, Mataazir: Journal of Educational Administration and Management, IV (1), 1-13,
- 12) <https://jurnal.stain-madina.ac.id/index.php/eye/article/view/1244>
- 13) Arisal Nurhadi, 2018. Laboratory Management in Efforts to Improve the Quality of Learning, Tarbawi; Educational Management Scientific Journal, 4 (01), 1-12 <http://jurnal.uinbanten.ac.id/index.php/tarbawi>
- 14) Nuri Dewi Muldayanti, 2021. Laboratory Management as Support for Biology Science Teaching and Learning Activities, Widya Laksana Journal, 10 (2), 189-196. <https://ejournal.undiksha.ac.id/index.php/JPKM/issue/view/2010>



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