

Management of Laboratory Facilities in Improving Students' Learning Achievement of SMP Negeri 4 Kayuagung

Rusmaniar¹

¹SMP Negeri 4 Kayuagung, South Sumatra, Indonesia

Corresponding author e-mail: rusmaakhyar@gmail.com

Abstract: This study aims to analyze the Management of Laboratory Facilities in Improving Student Achievement at SMP Negeri 4 Kayuagung OKI Regency. This type of research is descriptive qualitative research. Data collection tools use interviews, observation, documentation and literature review. Data analysis techniques using descriptive qualitative analysis techniques. The results of the study stated that the management of laboratory facilities in improving student achievement at SMP Negeri 4 Kayuagung OKI Regency was by improving the quality of laboratory management through improving the quality of laboratory services, increasing the role of laboratory human resources and maximizing laboratory infrastructure facilities at SMP Negeri 4 Kayuagung. Obstacles that are procedural in nature fulfill laboratory facilities for public schools which must follow the provisions of the regional government through the RKAS. School financial problems, laboratory administration systems and laboratory management capacity building training. The solution adopted is to involve all school members and school committees to take an active role in efforts to improve the quality of laboratory services. Then provide laboratory management training at SMP Negeri 4 Kayuagung.

Keywords: Laboratory, Learning Achievement, Management

A. Introduction

Student achievement is one of the main goals in the educational process. Achievement is also a characteristic that can describe the high and low levels of student learning success. Therefore, there is a need for maximum effort from all components of education to improve student achievement. In an effort to improve student learning outcomes, supporting facilities and infrastructure are needed. One of them is a laboratory that functions as a place for learning activities to take place (Hariani, 2017). The laboratory is one of the most important elements in supporting science learning activities in schools which require proof between the theory obtained and the actual reality. Science learning emphasizes inquiry where students are trained to develop scientific skills such as observing, collecting data, asking questions, developing hypotheses, designing experiments, and drawing conclusions. This is where the important role of a laboratory as a means of learning to explore knowledge obtained through experimental activities.

As an effective learning resource, the laboratory can encourage the achievement of the expected competencies for students. In science/biology learning students do not only listen to the lessons given by certain subject teachers, but they have to carry out their own activities to obtain and obtain further information about science in the laboratory (Yaman, 2016). Supported by the opinion of Harso (2012) states that what can influence the effectiveness of learning in schools includes infrastructure.

Hariani (2017) argues that the achievement of student learning does not only come to the fulfillment of educational facilities and infrastructure, but also the need to carry out good management so that these facilities and infrastructure can function continuously. Based on this, if these facilities or infrastructure are not managed properly, then these laboratory facilities and infrastructure cannot be used optimally in equipping students' skills and potential in achieving their level of learning achievement. Lumpkin (Rahayu & Sutarna, 2016) states that the existence of facilities and infrastructure in an attractive, clean, functional and comfortable condition can affect the achievements that will be produced by students.

Laboratory management is related to the achievement of student learning outcomes, because with good management, the provision of learning facilities can be used optimally. but the reality on the ground is very different. Laboratory management gets less attention. The results of management review meeting reports regarding the low management of laboratories in 2008 (Yasin et al, 2010) revealed that there were many laboratories equipment that did not function properly, laboratory equipment was not sufficient, the laboratory environment was not conducive to learning and teaching and laboratory and workshop safety were unsatisfactory.

In Permendikbud number 65 of 2013 concerning Process Standards for Primary and Secondary Education it also states that learning activities are fully directed at developing the domain of knowledge, skills and attitudes as a whole through a scientific approach and strengthened by the application of discovery/inquiry learning and learning based on discovery/inquiry learning which produces work based on problem solving (*project-based learning*). Therefore, to realize the content standards and educational process standards that have been set, it is necessary to have a laboratory as a means and source of learning for students (Rusmaniar et al., 2023).

Seeing this, the government has built science laboratories in schools equipped with equipment and facilities. Laboratories in the learning process are used to achieve various objectives. Cognitive objectives relate to learning scientific concepts, developing process skills, and increasing understanding of the scientific method. Practical objectives relate to the development of skills in conducting science training, data analysis, communication and teamwork skills. Affective goals relate to

motivation towards *science*, responses and ability to understand the surrounding environment (Mastika et al, 2014).

This research was conducted at Kayuagung 4 Public Middle School, OKI District. The researcher chose SMP Negeri 4 Kayuagung, OKI Regency, which has accredited A status as the research location. It also has adequate laboratory resources and facilities. From the results of initial observations conducted by researchers on June 10, 2022 at SMP Negeri 4 Kayuagung, OKI Regency, as the research location. The researcher found several indicators which stated that the teacher had carried out his duties and responsibilities both as a teacher and his responsibilities well, especially in the learning process. The quality of the learning process is an important aspect in efforts to improve student academic achievement. However, in an effort to maximize school laboratory facilities, teachers still experience several obstacles besides the teacher's ability to manage IT-based learning, another problem is the lack of experimental activities in the science learning process which is in contrast to the enthusiasm of students in participating in practicum learning activities in the laboratory. There are several factors causing the lack of experimental activities in science learning, including the availability of laboratory equipment which is still limited, practicum takes a long time, there are still difficulties in operating equipment, and experiencing problems in making and modifying equipment and experimental sets.

Therefore, science learning that has not been followed optimally by working in the laboratory results in the learning outcomes obtained by students in science subjects not meeting expectations. Various efforts need to be made to overcome this problem, including increasing teacher competence, meeting the needs for facilities and infrastructure for laboratories in various educational units. Laboratory facilities and infrastructure in schools need to be managed properly by the teacher so that the function and role of the laboratory are realized in an effort to increase student achievement. As the results of research from Atmojo, et al., (2021). which states that the principal encourages and directs teachers to become professional teachers by increasing their IT mastery and by assigning teachers to attend training and seminars, then inviting teachers, preparing effective and efficient lesson plans and evaluating the results of the learning process. Teachers are encouraged to continue to find ideas and ways to convey learning material so that students are able to absorb the material well.

Etymologically, the word *management* comes from English, namely *management*, which was developed from the word *to manage*, which means to manage or manage. The word *manage* itself comes from the Italian language, *maneggio*, which was adopted from the Latin *maneggiare*, which comes from the word *manus*, which means hand (Samsudin, 2019). Hasibuan (2011) argues that management is a distinct process, consisting of planning, organizing, actuating and controlling actions carried out to

achieve predetermined goals through the use of human resources and other sources. According to Handoko (2017), management can be defined as working with people to determine, interpret and achieve organizational goals by carrying out the functions of planning, organizing, preparation of personnel or staffing, directing and leadership, and supervision.

From the various definitions of management above, it can be concluded that management is the process of planning, organizing, directing and controlling within an organization in order to achieve organizational goals effectively and efficiently. Facilities and infrastructure as an integral part of the whole activity learning in educational units has a function and role in achievement of learning activities according to the curriculum of the educational unit. So that fulfillment of appropriate and efficient facilities and infrastructure (effective and efficient), a proper needs analysis is needed in planning fulfillment (Barnawi & Arifin, 2015). In terms of school facilities and infrastructure, it is distinguished between educational facilities and educational infrastructure. As for each understanding, namely the means of education are all devices Equipment, materials and furniture are directly used in the educational process at school. While educational infrastructure is all fittings foundation that indirectly supports the implementation of the educational process in school (Barnawi & Arifin, 2015).

While the laboratory is a place or room equipped with certain equipment to conduct experiments or investigations. The laboratory acts as a place to provide an illustration of theoretical material. Besides that, the laboratory is also a place for students to get the opportunity to have direct experience in solving problems raised from the observed phenomena or the theories they learn (Margono, 2010). The laboratory is a place where scientific research, experiments, measurements or scientific training is carried out. Laboratories are usually made to allow these activities to be carried out in a controlled manner (Daryanto, 2018).

Some of the functions of the laboratory room, among others, are as follows: 1) As a place for practical biology learning activities that require special equipment; 2) As a place that can encourage the enthusiasm of students to deepen the understanding of a fact being investigated or observed; 3) Place of display or exhibition; 4) As a place for students to learn to understand the characteristics of nature and the environment through optimizing process skills and developing a scientific attitude; 5) As a place for students to practice applying process skills in accordance with learning demands that prioritize processes other than products; 6) Providing completeness for theoretical lessons received so that theory and practice are not two separate things, but two things that are a unit. Both study each other and find each other's foundation. Daryanto (2018), that the functions of the laboratory are as follows: 1) Laboratory as a learning resource; 2) Laboratory as a learning method; 3) In the laboratory there are

two methods of learning, namely the experimental method and the observation method; 4) Laboratories as educational infrastructure Laboratories as educational infrastructure or learning process containers.

Munandar (2016) argues that the laboratory consists of rooms equipped with various equipment with various conditions that can be controlled, especially equipment for conducting experiments. The laboratory has a very important role in supporting the success of learning, both in secondary and higher education. In secondary education, laboratories are needed to support classroom learning that directly proves existing theories, assist students in developing interest in research and research sites for teachers in subject areas.

Thus, it can be stated that the management of laboratory facilities is the management of the teaching and learning process with practicum activities that involve interactions between students, equipment, and materials. Through practicum activities in the laboratory, it is hoped that students will be able to learn, gain understanding, and direct experience regarding the nature, secrets, and natural phenomena of life that cannot be explained verbally.

According to Baharuddin & Wahyuni (2012) achievement is a learning result that comes from information that has been obtained at the previous stage of the learning process. Achievements can be in the form of skills in doing something, the ability to answer questions, and being able to do assignments.

Sardiman (2007) Achievement is a real ability which is the result of interaction between various factors that influence both from within and from outside the individual in learning. According to Arifin (2013) learning achievement has the main function, including 1) learning achievement as an indicator of the quality and quantity of knowledge that has been mastered by students; 2) learning achievement as a symbol of curiosity; 3) learning achievement as information material in the education dimension; 4) learning achievement as an internal and external indicator in educational institutions. Internal indicators in the sense that learning achievement can be used as an indicator of the level of productivity of an educational institution.

Komariah & Triatna (2015) achievement is the goal of the school. An effective school is a school that makes achievements not only for students but for all components of the school, but the most important indicator is student achievement. The intended student achievement is not only superior in cognitive intelligence but also in affective and psychomotor aspects.

According to Slameto (2013), in general the factors that influence learning and achievement can be classified into two parts, namely internal factors and external

factors. Internal factors are factors originating from within students that can affect academic achievement and these factors can be divided into two parts, namely physiological factors in this case the physiological factors in question are factors related to health and the five senses which include: 1) physical health To be able to take good studies students need to pay attention to and maintain the health of his body. Weak physical health can be a barrier for students in completing their study program; 2) the five senses are a requirement for good learning, in today's education the five senses that have a more important role in learning are the eyes and ears. This is important because some of the things humans learn through sight and hearing.

Internal factors that affect achievement, namely factors that come from within the individual who is studying include: 1) a healthy body, which means that the whole body is free from disease. A person's health is very influential on his academic achievement; 2) intelligence; 3) attention; 4) interest; 5) talent; 6) motivation; 7) maturity.; 8) readiness. On the other hand there are external factors which are factors that are outside the students. External factors that influence 1) family factors; 2) school factor; 3) Community factors (Jamali & Prasoj, 2013).

Psychological factors Psychological factors have an important role in the success of students in achieving academic achievement. There are many psychological factors that can affect student academic achievement, including 1) intelligence in general, the academic achievement displayed by students has a close relationship with the level of intelligence they have. In general, intelligence is measured at school, and the measurement tends to be scholastic. Scholasticism is an ability that is taught in schools; 2) talent in addition to intelligence (intelligence), talent is one of the factors that greatly influence the process and results of one's learning and support the success of learning in certain fields. Intelligence only provides a global picture of general intellectual ability.

Other factors that can affect achievement include 1) family environment factors; 2) school environmental factors; 3) community environmental factors (Sarwono, 2014). Family Environment Factors include 1) family socio-economic with adequate socio-economic, a person has more opportunities to get better learning facilities, from books, stationery to school selection; 2) the education of parents who have taken higher education tend to pay more attention to and understand the importance of education for their children, compared to those who have a lower level of education; 3) parental attention and the atmosphere of the relationship between family members. Support from the family is a booster for someone's achievement spirit. Support in this case can be direct, in the form of praise or advice; or indirectly, such as harmonious family relations. The School Environment factors include 1) facilities and infrastructure; 2) teacher competency; 3) curriculum and teaching methods (Sarwono, 2014).

Community Environmental Factors include 1) Socio-cultural, namely the community's view of the importance of education will affect the seriousness of educators and students. People who still look down on education will be reluctant to send their children to school and tend to look down on teachers' work; 2) Participation in education, that is, if all parties have participated in and supported educational activities, from the government (in the form of policies and budgets) to the grassroots community, everyone would appreciate and strive to advance education and science (Sarwono, 2014).

B. Methods

This research was conducted at SMP Negeri 4 Kayuagung OKI using a descriptive qualitative approach. The informants who became *the key persons* were school principals, teachers and students of SMP Negeri 4 Kayuagung OKI, Jejawi District, OKI Regency. Data collection techniques using interview techniques, observation and documentation. The focus in this research is to analyze and observe the process of character-based learning management at SMPN 4 Kayuagung OKI, Jejawi District.

Data analysis using qualitative data analysis. Moeloeng (2014) suggests that qualitative data analysis is an effort made with data, organizing data, sorting it into manageable units, synthesizing it, looking for and finding patterns, finding what is important and what is learned, and what can be told to others.

The stages carried out in the research are data collection. At this stage, the researcher collects all data using predetermined data collection techniques, namely interview techniques, documentation, observation. The second stage is data reduction. The researcher summarizes or looks for important points from each data obtained. The third stage, data presentation, the data that has been arranged is then presented systematically, the last stage is drawing conclusions and verification the findings are then described in the form of a report.

C. Results and Discussion

Planning for Laboratory Infrastructure to Improve Student Learning Achievement at SMP Negeri 4 Kayuagung

The findings based on the results of data collection carried out by researchers can be stated that the planning for improving laboratory management of SMP Negeri 4 Kayuagung carried out by the school principal begins with conducting an initial needs analysis in improving the quality of laboratory management at SMP Negeri 4 Kayuagung. Then the principal of SMP Negeri 4 Kayuagung formulated a plan to improve laboratory quality into the school program to support efforts to improve

student achievement at SMP Negeri 4 Kayuagung. Plans to improve the quality of management of laboratory facilities at SMP Negeri 4 Kayuagung which consist of planning for the procurement of infrastructure facilities, arrangement of equipment in the laboratory, cataloging, and planning for human resource development. These activities are carried out through the School Work Plan and Budget.

Planning for improving the quality of laboratory management is included in the program to support improving student learning achievement at SMP Negeri 4 Kayuagung which schedules several activities including the procurement of infrastructure, arrangement of equipment in the laboratory at SMP Negeri 4 Kayuagung.

Planning for improving the quality of laboratories within the framework of achieving school goals by taking into account specifically the needs of reading materials for SMP Negeri 4 Kayuagung students is contained in the School Work Plan (RKS) for SMP Negeri 4 Kayuagung. In the RKS for the 2021/2022 academic year, it is then formulated into the school's mission, namely to improve student learning achievement which will lead to improving the quality of SMP Negeri 4 Kayuagung.

The principal together with all *stakeholders* of SMP Negeri 4 Kayuagung formulates rules of conduct that must be obeyed by laboratory users so that they can maintain the facilities and use the laboratory according to their needs. Planning to improve the quality of laboratory infrastructure involves all components of the school including parents of students at SMP Negeri 4 Kayuagung. The involvement of school components, including teachers, education staff and school committees, is carried out by providing opportunities for all components to be involved in efforts to improve the quality of the laboratory at SMP Negeri 4 Kayuagung. In the formulation process, the principal of SMP Negeri 4 Kayuagung formulates a learning program so that it can be directly related to school laboratory activities. Likewise with the school committee which is a deliberative body for schools. The school committee of SMP Negeri 4 Kayuagung as the principal's partner in deliberating the future of the school.

Therefore, the school committee representing parents and the community is involved to participate in providing input to the school in formulating the vision, mission, goals, targets to be achieved by the school, to determine the method or strategy to be taken to achieve it in the form of policy formulation, programs and school activities. In addition, the school committee as the giver of consideration is given the opportunity to provide input and considerations in terms of the draft school income and expenditure budget (RAPBS), unit performance criteria, education staff criteria, and educational facility criteria. In an effort to improve the quality of education at Kayuagung 4 Public Middle School it is appropriate for the school principal to involve the school committee starting from providing input and considerations in establishing

the RAPBS, giving consideration in implementing the education management process in schools and identifying existing resources in the community as considerations in supporting the implementation of the program school work.

The involvement of the Education Office is certainly carried out because in general the planning stages for the fulfillment of facilities, especially public-school laboratories, follow the rules set by the Regional Government through the RKAS. In general, the stages of asset planning related to public school infrastructure follow the rules set by the Regional Government through the RKAS. Therefore, planning for the facilities of SMP Negeri 4 Kayuagung follows the rules contained in the RKAS which divides planning into three stages, namely the needs analysis stage based on strategic environmental analysis.

In the needs analysis stage, schools identify strategic factors that influence the general condition of education. These factors will also determine the location and role of education, especially SMP Negeri 4 Kayuagung.

In the planning process, school principals submit proposals through a mechanism that has been determined by the education office, in this case the South Sumatra Province Education Office. This proposal is in accordance with the needs of schools related to infrastructure that can support the teaching and learning process at SMP Negeri 4 Kayuagung.

Thus, the planning of laboratory infrastructure facilities at Kayuagung 4 Public Middle School has been prepared in accordance with established regulations. The regulation is carried out through three stages, namely analyzing school needs, formulating school needs, and mapping or organizing as a form of planning realization of school asset procurement.

Implementation of Management of Laboratory Facilities to Improve Student Learning Achievement at SMP Negeri 4 Kayuagung

Based on the findings through data collection, it can be stated that the findings of efforts to improve laboratory services for SMP Negeri 4 Kayuagung are that in terms of laboratory services, SMP Negeri 4 Kayuagung has not reached the perfect target for obtaining laboratory accreditation based on Permendiknas number 24 of 2007 concerning the Science laboratory room which functions as a place practical science learning activities that require special equipment. The Natural Sciences Laboratory (IPA) at Kayuagung 4 Public Middle School has 2 rooms, namely the preparation room and storage room. The preparation room is used to prepare tools/materials that will be used immediately for practicum, while the storage room/warehouse is used to

store damaged equipment. The following are the tools/materials in the Natural Sciences Laboratory of SMP Negeri 4 Kayuagung.

To improve laboratory services, the school seeks to maximize existing resources in managing the laboratory for SMP Negeri 4 Kayuagung. SMP Negeri 4 Kayuagung provides services to users for six days and every day it is carried out for five hours starting at 07.00-12.00 (Results of an interview with Netty Fatimah as principal of SMP Negeri 4 Kayuagung on October 2, 2022).

To find out activities in laboratory management. Therefore, the laboratory staff makes a report on laboratory service activities every month by providing a report related to the intensity of learning activities in the laboratory of SMP Negeri 4 Kayuagung. To monitor all laboratory activities, it is necessary to have a report in the form of activity progress in the laboratory at Kayuagung 4 Public Middle School. This is intended to make it easier to monitor and evaluate each activity. The most important thing in the division of tasks is the preparation of rules and placing human resources who have the capacity and capability to manage the laboratory of SMP Negeri 4 Kayuagung. It is hoped that the implementation of all activities can run smoothly in providing the best service in the laboratory of SMP Negeri 4 Kayuagung.

Emphasis on school laboratory managers in order to create a conducive atmosphere in the laboratory environment. In carrying out our duties as school laboratory staff, the school principal directs us to carry out the tasks assigned to us with full responsibility, not only to the school principal, but to be even more responsible for the progress of the school.

Increasing the Role of Laboratory Human Resources SMP Negeri 4 Kayuagung

Based on the results of data collection carried out by the researcher, it can be stated that the number of laboratory personnel owned at SMP Negeri 4 Kayuagung has met the standards, namely consisting of 3 laboratory staff consisting of the head of the laboratory and 2 laboratory administrative staff. Based on the findings, the researchers obtained laboratory staff qualifications at Kayuagung 4 Public Middle School, namely Bachelor graduates in the field of education and D3.

The principal of SMP Negeri 4 Kayuagung appointed 3 laboratory managers by considering that the laboratory of SMP Negeri 4 Kayuagung had a lot of equipment. The principal of SMP Negeri 4 Kayuagung provides an opportunity for laboratory managers to take part in training and must have a competency certificate issued by an accredited certificate institution.

SMP Negeri 4 Kayuagung seeks to build quality laboratories by instilling *a mindset* in all school members about the importance of laboratories in supporting the educational process. The laboratory is positioned as the heart of the school. This means that in the paradigm believed by the principal, the laboratory is positioned as a central activity within the school institution. The steps taken by school principals show that in making policies that can be supported by stakeholders, it is necessary to have a strategy that touches on psychological aspects in the form of awareness of stakeholders. With the thoughts or *mindset* of school members that have been awakened, the implementation of policies made by the principal will receive support, and can be realized. With *the mindset* that has been formed, the principal leads all school members to build commitment and awareness to participate in maximizing efforts to improve laboratory quality at SMP Negeri 4 Kayuagung.

Another activity carried out to improve the quality of laboratory management for SMP Negeri 4 Kayuagung, by maximizing school resources is to build the awareness of teachers and educational staff for SMP Negeri 4 Kayuagung to participate in efforts to improve the quality of school laboratories. The Principal of SMP Negeri 4 Kayuagung conducts activities such as providing input and listening to input from teachers and education staff regarding efforts to create a literacy culture in accordance with the school's vision and mission. In addition to motivating teachers, the principal also provides opportunities for teachers to participate directly in efforts to improve laboratory quality through learning activities such as collaborating with laboratories in using reference teaching materials.

The coaching implemented by the Principal of SMP Negeri 4 Kayuagung is considered quite good, he is able to maintain communication so that it can be received effectively. the school principal also really appreciates the work of the school laboratory manager, so that it does not cause conflict in the laboratory and at school can be maintained so that conditions are always conducive (Results of interview with Yeyen Juniza laboratory manager for SMP Negeri 4 Kayuagung on 7 October 2022).

Based on the results of an interview with Asnawati, the head of the laboratory for SMP Negeri 4 Kayuagung on October 10, 2022, she stated that efforts to improve her skills and experience in the field of laboratory management were carried out with high professionalism. The school principal calls the laboratory manager and coordinates directly if there are things that he wants to convey to those concerned. The communication process went very well. The point is that the principal tries to find a solution by listening to input to find solutions to the problems faced in managing the laboratory.

Based on the data obtained, it can be concluded that the implementation of laboratory quality improvement by the principal at SMP Negeri 4 Kayuagung has been running

according to the program that has been planned. In terms of implementation time, the instruments and methods for improving laboratory quality by maximizing the human resources of SMP Negeri 4 Kayuagung can be carried out properly by the school principal regardless of the many deficiencies that must be corrected such as the administrative system which is still managed manually. However, the principal of SMP Negeri 4 Kayuagung always tries to inspire not only the laboratory manager but all teachers and education staff to be able to take part in efforts to improve the quality of laboratory services so that the school's efforts in building a literacy culture can be maximized immediately. Of course, the main goal is to achieve the best performance, have responsibility with awareness not because of fear. The formation of high dedication in teachers to their respective responsibilities results in increased school quality in both the academic and non-academic fields.

Maximizing the Use of Laboratory Facilities at SMP Negeri 4 Kayuagung

Based on the results of data collection carried out by researchers, the findings can be put forward that in order to improve the quality of laboratory management at SMP Negeri 4 Kayuagung the school principal seeks to maximize the existing infrastructure in the laboratory at SMP Negeri 4 Kayuagung. Currently the SMP Negeri 4 Kayuagung laboratory is in accordance with the Guidelines for National Standards for Junior High School Laboratories based on Permendiknas number 24 of 2007 that the science laboratory room can accommodate a minimum of one study group and the minimum ratio of the area of the science laboratory room is 2.4 m²/student. For study groups with less than 20 students, the minimum area of the laboratory room is 48 m² including the storage and preparation room area of 18 m² the minimum width of the science laboratory room is 5 m.

Efforts to improve the quality of laboratory management were also carried out by adding equipment to the SMP Negeri 4 Kayuagung laboratory based on the type, ratio and condition of the equipment and infrastructure of the SMP laboratory. Based on the findings of the researchers that Kayuagung 4 Public Middle School had met the requirements, namely the Kayuagung 4 Public Middle School laboratory had good lighting and good ventilation in accordance with Middle School laboratory standards and each laboratory equipment and facility was checked for functions that needed to be repaired.

Based on the findings of the researchers, the facilities and infrastructure in the SMP Negeri 4 Kayuagung laboratory. Overall, the suitability of the SMP Science laboratory facilities and infrastructure is based on Permendiknas No. 24 of 2007. There is a laboratory staff head room, a set of work furniture such as: tables, chairs. Storage furniture i.e. a set of bookshelves, magazine racks, chest of drawers and lockable cabinets. The existence of multimedia equipment, namely a set of laptops equipped

with communication and information technology. Based on the results of the researchers' observations, it can be stated that the condition of laboratory facilities at SMP Negeri 4 Kayuagung is as follows. The Kayuagung 4 Public Middle School laboratory is located in a comfortable room with good air circulation where there are plenty of air vents and good lighting which makes the laboratory comfortable for students to read and carry out activities in the laboratory.

Based on the results of data collection carried out by researchers, it can be stated that efforts to maximize existing infrastructure facilities through the addition of equipment and laboratory facilities for SMP Negeri 4 Kayuagung and seeking laboratory facilities in accordance with the Guidelines for Junior High School Laboratory National Standards which include room area and conditions laboratory according to the existing criteria. In addition, Kayuagung 4 Public Middle School seeks to condition a comfortable atmosphere in the laboratory by placing the laboratory in a comfortable room with good air circulation where there is ample air ventilation and good lighting making the laboratory comfortable for students to carry out activities and carry out activities in the laboratory.

Constraints and Obstacles to Improving Laboratory Quality at SMP Negeri 4 Kayuagung

Based on the results of data collection carried out by researchers, it can be stated that the obstacles faced by the principal of SMP Negeri 4 Kayuagung in the planning aspect are the fulfillment of public school laboratory facilities following the rules set by the Regional Government through the RKAS. Therefore, schools follow the rules set by the Regional Government. This is enough to hinder the headmaster of SMP Negeri 4 Kayuagung from developing a laboratory quality improvement program. In practice, it only follows the work plan contained in the PSAK which is used by the principal as a reference in preparing a laboratory quality improvement program for SMP Negeri 4 Kayuagung. In the planning process, school principals submit proposals through a mechanism that has been determined by the education office, in this case the education office. The proposal is in accordance with the needs of the school.

Obstacles from the aspect of quality of laboratory services at Kayuagung 4 Public Middle School, based on the results of data collection carried out by researchers, it can be stated that the administration system at the Kayuagung 4 Public Middle School laboratory is still managed manually. This is an obstacle that is a little slow in providing administrative services at the SMP Negeri 4 Kayuagung library where the circulation process of borrowing books is not carried out quickly. In addition, the documents in the SMP Negeri 4 Kayuagung laboratory have not been managed optimally because the administrative system is still conventional because the Information Technology (IT)-based Information System has not yet functioned. Even

though this facility can provide easy and fast services in carrying out school library administration.

Based on the results of data collection carried out by researchers, it can be stated that recording in the laboratory of SMP Negeri 4 Kayuagung is still being done by writing it in a book manually to group books, enter reports, number of books, description of the condition of each item in the laboratory. Therefore, the bookkeeping system that will be implemented cannot yet search for reports because it is still a recapitulation for reporting purposes.

In addition, the lack of awareness among school members to participate in maintaining school infrastructure is an obstacle for the school in maximizing the function of infrastructure facilities at Kayugaung 4 Public Middle School. This result is in accordance with the results of research from Nugraha & Fitria (2019) which states that the cause of the gap in the completeness of existing infrastructure at school is the lack of awareness of school personnel regarding the importance of existing infrastructure at school, especially in improving the learning process, existing facilities are not managed properly and correct so that many existing facilities are in a state of disrepair and even disappear.

Obstacles in the implementation of laboratory management professionalism development carried out by the principal of SMP Negeri 4 Kayuagung include the limited ability of laboratory managers at SMP Negeri 4 Kayuagung which is quite an obstacle where the coaching process takes quite a long time. Another obstacle in the implementation of improving the quality of laboratories for SMP Negeri 4 Kayuagung is the school's financial limitations where the school does not collect committee money so practically it only relies on BOS funds for school operations. Therefore, the principal is very selective in choosing which activities are more urgent to carry out and in accordance with the needs of the Kayuagung 4 Public Middle School teachers.

Obstacles in the aspect of Laboratory Human Resources SMP Negeri 4 Kayuagung namely the lack of training and *workshops* that can be attended by laboratory managers both at school and outside school. This is an obstacle in efforts to increase the ability of resources in the laboratory of SMP Negeri 4 Kayuagung. In addition, due to limited school budget constraints, school principals have difficulty bringing in experts who can provide training as well as provide guidance to laboratory managers because there are so few experts who can serve as resource persons in Kayuagung District. Inviting experts from outside is certainly an obstacle where schools have to budget for the operational costs of the training.

Solutions to Facing Management Implementation Obstacles Improving the quality of the laboratory at SMP Negeri 4 Kayuagung

From the results of data collection carried out by researchers, a solution can be put forward by the principal in dealing with the obstacles encountered in improving the quality of laboratories at SMP Negeri 4 Kayuagung by inviting the school committee to take an active role in efforts to improve laboratory quality. The principal of SMP Negeri 4 Kayuagung also provides continuous encouragement to increase the experience and knowledge of laboratory managers at SMP Negeri 4 Kayuagung. To fulfill this effort, the principal of SMP Negeri 4 Kayuagung held an intensive approach by inviting laboratory managers to dialogue to find solutions to the obstacles encountered in managing the laboratory. This effort was also carried out by the principal of SMP Negeri 4 Kayuagung to evaluate and provide directions for improvement. This activity is carried out personally, so that it is more specific, weaknesses, deficiencies and strengths can be detected in detail. So that our directions for improvement are also clearer. With this activity it is hoped that each teacher can improve his performance personally to achieve the targeted competencies.

The principal of SMP Negeri 4 Kayuagung provides training and assignments and to improve skills is given the opportunity to take part in activities carried out outside of school. Assignments are one of the principal's efforts to increase competency and experience more about quality improvement. The assignment to the laboratory manager at Kayuagung 4 Public Middle School gave him the opportunity to interact and communicate with many parties, outside of school. Assignments to carry out cross-sectoral activities, attend meetings, activity committees to improve capabilities. Based on the explanation above, it can be stated that the solution taken by the principal of SMP Negeri 4 Kayuagung in facing the obstacles in implementing management of improving laboratory quality at SMP Negeri 4 Kayuagung was taken by 1) inviting the school committee to take an active role in efforts to improve laboratory quality; 2) Provide training and encourage laboratory managers to improve their competence through reading articles and reading laboratory management modules; 3) Encouraging all school members to take part in laboratory quality improvement activities at SMP Negeri 4 Kayuagung

D. Conclusion

From the results of research and discussion, it can be concluded as follows. (1) Management of laboratory facilities in improving student achievement at SMP Negeri 4 Kayuagung OKI Regency is carried out by 1) planning to improve the quality of laboratory management; 2) improve the quality of laboratory management through improving the quality of laboratory services, increasing the role of laboratory human resources and maximizing laboratory infrastructure facilities at SMP Negeri 4

Kayuagung. (2) The obstacles faced are 1) Planning for the fulfillment of public school laboratory facilities follows the rules set by the Regional Government through the RKAS. Therefore, schools follow the rules set by the Regional government; 2) the laboratory administration system for SMP Negeri 4 Kayuagung is still managed manually; 3) Lack of training and *workshops* related to improving laboratory management capabilities that are held both at school and outside school; 4) the financial limitations of schools to provide training while providing guidance to laboratory managers on an ongoing basis. (3) The solution taken by the principal of SMP Negeri 4 Kayuagung in facing obstacles in implementing quality improvement of laboratory management at SMP Negeri 4 Kayuagung is taken by 1) inviting the school committee to take an active role in efforts to improve the quality of laboratory services; 2) Provide training and encourage laboratory managers to improve their competence through reading articles and reading laboratory management modules; 3) Encouraging all school members to take part in activities to improve the quality of laboratory management at Kayuagung 4 Public Middle School

Based on the research results, the following suggestions can be given. (1) The school principal should increase his role in providing effective direction and coaching to school laboratory management staff. (2) Laboratory managers are expected to be able to improve their competence through academic qualifications and coaching programs held both by schools and outside schools such as workshops, training, seminars and training. (3) Principals should be able to provide a special budget for rewarding *laboratory* managers as an effort to motivate them to improve their performance.

References

- Atmojo, H. B. R., Lian, B., & Mulyadi, M. (2021). The Role of Teacher Leadership and Professionalism in Improving the Quality of Learning. *Journal of Educatio FKIP UNMA* , 7 (3), 744-752.
- Barnawi., & Arifin, M. (2015). *Professional Teacher Performance* . Ar-Ruzz Media.
- Daryanto. (2018), *School Laboratory Management*. Gava Publisher.
- Handoko, T. H. (2017). *Personnel Management and Human Resources*. BPFE.
- Hasibuan , M. S. P. (2011). *Human Resource Management*. Jakarta: Bumi Aksara
- Harso, M. (2012). The influence of principal leadership and teacher performance on school effectiveness in SMK Pematang District. *Educational Management*, 1 (1).
- Hariani, D. (2017). Management of Multimedia Laboratory Facilities and Infrastructure in Improving Student Achievement at SMK Negeri 2 Buduran Sidoarjo. *Education Management Inspiration*, 5 (1).
- Mastika, I. N., Adnyana, I. B. P., & Setiawan, I. G. N. A. (2014). Analysis of Biology Laboratory Standardization in the Learning Process at SMA Negeri Denpasar City. *Ganesha University of Education Postgraduate Program EJournal*, 4, 1-10.
- Margono, H. (2010). *Laboratory Method*. Malang: State University of Malang.

- Munandar, K. (2016). *Introduction to the School Biology Science Laboratory*. Bandung: Aditama Refika
- Nugraha, A., & Fitria, H. (2019). Infrastructure Management in Improving the Learning Process. In *Proceedings of the National Seminar on Postgraduate Programs at the University of PGRI Palembang*, 12(01).
- Rahayu, SM, & Utama, S. (2016). Management of Middle School Educational Facilities and Infrastructure. *Journal of Varidika*, 27 (2), 123-129 .
- Rusmaniar, R., Widiyatsih, T., & Setiyo, H. (2023). Individual Technical Academic Supervision Using Digital Technology. *PPSDP International Journal of Education*, 2(1), 46-54. <https://doi.org/10.59175/pijed.v2i1.60>
- Samsudin, S. (2019). *Human Resource Management*. CV. References. Loyal.
- Sarwono, S. W. (2014). *Adolescent Psychology*. Rajagrafindo Persada.
- Yasin, R. M., Rahman, M. N. A., Mohamad, Z., & Rahman, S. (2010). Developing framework for intelligent laboratory management. *Procedia-Social and Behavioral Sciences*, 9, 1194-1197.