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THE INFLUENCE OF LABORATORY MEDIA USE AND MOTIVATION ON LEARNING OUTCOMES

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ABSTRACT

This study aims to: 1) determine the effect of the Utilization of Laboratory Media on Learning Outcomes of Grade VIII Students in Science Subjects at Batu Putih State Middle School. 2) determine the effect of motivation on the learning outcomes of Class VIII students in science subjects at Batu Putih Public Middle School. 3) determine the effect of the use of laboratory media and motivation on the learning outcomes of Class VIII students in science subjects at Batu Putih Public Middle School. This study uses a quantitative approach to the regression model because the research results are quantitative data on the Effect of the Utilization of Laboratory Media and Motivation on Learning Outcomes of Class VIII Students in Science Subjects. The results showed that the use of Laboratory Media had an effect of 65.0% and $_{count>\ table}$ (3.629 > 1.985) and value its significance < α (0.000 < 0.05), it can be concluded that there is a significant influence between Laboratory Media on student learning outcomes. For the variable motivation has an effect of 65.0% with a value of $_{count}$> t $_{table}$ (4.878 > 1.985) and value significance < α (0.000 < 0.05), it can be concluded that there is a significant influence between Laboratory Media and Motivation on student learning outcomes.

Keywords: *Laboratory Media, Motivation, and Learning Outcomes*

INTRODUCTION

National development is a means to achieve national goals. One of the national goals is to educate the life of the nation. To reach this, the government seeks to organize a national education system. Education is a basic right of every citizen country has been recognized in the 1945 Constitution article 31, paragraph 1, which states that every citizen has the right to education, while paragraph 3 states that the government seeks and organizes a national education system that increases faith and piety as well as a noble character in the context of educating the life of the nation which is regulated by law act.

Education as a system is a functional whole directed at a goal. To improve education quality, improvement, and repair components continue, likewise, with the fulfillment of learning support facilities and infrastructure. In addition to this fulfillment, it must be accompanied by good management, following national standards, and the applicable learning foundation to fully support learning.

One of the problems facing the world of education today is the weak learning process;

children are not encouraged to develop abilities (Sanjaya, 2008, p. 1). In the learning process, students are equipped with the ability to memorize information and theory. Furthermore, the information and theory that has been memorized are applied to understand the next material without being able to apply the theory. It is feared that this will affect their understanding and skills in the learning process, which will later impact student learning outcomes.

The low learning achievement indicated by the student's grades which are still below the KKM score can be caused by several factors. In general, the factors that influence student learning can be divided into two, namely factors intrinsic (from within the student) and extrinsic factors (from outside the student). Factors originating from students include physical health, interest in learning, intelligence, learning motivation, student talents, cognitive abilities, and student attitudes towards subjects. While factors that come from outside the student's self include family, physical and social environment, curriculum, teaching methods, teachers, learning media, facilities, and amenities. So it was concluded that good components must support good performance.

The factors that influence learning achievement are external factors and internal factors. External factors that affect learning achievement are the use of laboratory media. Laboratory media is an intermediary used for students to observe directly through practicum, which aims to stimulate students to learn. The existence of a laboratory is expected so that the learning process will be easier for students. However, during the implementation of learning usage laboratory is not optimal.

This can be seen from the lack of practicum in the laboratory given by science subject teachers. Meanwhile, one of the internal factors that influence student achievement in science is learning motivation. Learning motivation is an encouragement that comes from within or outside a person so that it can lead to learning activities. The role of this motivation is very important to encourage students to obtain good achievement results. The existence of learning motivation can lead to enthusiasm for student learning. In the end, the optimal achievement will be achieved. If the motivation in student practicum is low and the use of laboratory media is not optimal, the learning achievement will be low.

Reber in Mahmud (2012:100), learning motivation is an internal state of both humans and animals that encourages them to do something. In this sense, motivation means a supplier of power to behave in a directed manner. Meanwhile, Groan in Santos (2014: 107) defines motivation as an understanding that includes all drivers, reasons, and impulses in humans, which says individuals do something, and all behavior that exists within individuals essentially has motives. Motives can work consciously and also unconsciously for human beings. Motives give purpose and direction to our behavior.

Based on this description, it is known that motivation is the overall drive, desire, need, and similar power that drives a person's behavior or spurs people to behave or a person's psychological condition contained within a person that encourages him to do something to achieve a goal. The goal to be achieved is high learning outcomes that are equal to or greater than the minimum completeness criteria (KKM).

Learning outcomes, according to Bloom's theory (2014: 22), are grouped into three domains, namely cognitive, affective, and psychomotor. The cognitive domain is the realm that includes mental (brain) activity. The affective domain includes behavioral traits such as feelings, interests, attitudes, emotions, and values.

The psychomotor domain is a domain related to skills or the ability to act after a person receives a certain learning experience.

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These three domains must be owned by students in the learning process in order to obtain maximum learning results. Naaman (2007) suggests that laboratories in schools can support learning activities and achieve three domains of educational goals: cognitive, affective, and psychomotor. A laboratory is a space where practical or research activities are carried out, as indicated by a complete laboratory infrastructure (Widyarti, 2005).

Hadith (2010) states that the quality of education is influenced by the learning activities carried out by teachers and students both in the classroom, in the laboratory, in the workshop, and in other learning arenas, which are manifested in the form of real learning outcomes achieved by students in the form of average grades. -an average of all subjects in one semester. Practical activities in the laboratory are expected to help students to better understand and understand the theoretical concepts given by the teacher in class. The learning process in the laboratory must certainly meet the established curriculum standards. If practicum activities are not carried out according to the curriculum, students cannot achieve some learning objectives, which can affect their learning outcomes (Sobiroh, 2006, p. 3).

The laboratory is used as a place to conduct experiments, research, or scientific research related to science (Physics et al.) and other sciences. The laboratory can be in the form of a closed room consisting of various parts that have their respective functions or an open space such as gardens, parks, fields, and others. Apart from that, another understanding of the laboratory is a place for a group of people who carry out various kinds of research activities, observations, training, and scientific testing as an approach between theory and practice from various scientific disciplines. Physically, the laboratory can also refer to an enclosed space, room, or open space.

Practicum activities are an inseparable part of learning science because having practicum will train students' skills, from the skills to observe a problem to the skills in communicating scientific results in the form of work reports, and with practicum, students will be more skilled in using practicum equipment in the laboratory. In addition, practicum in science learning is an effective method used to achieve learning objectives.

Through practicum activities it can be a vehicle for learning a scientific approach because practicum will provide an experience that is very supportive in carrying out a scientific approach; this is because, in practicum activities, students will be taught to formulate problems, design experiments, use tools, make measurements, interpret acquisition data, and communicated in the form of reports. In addition, one of the science learning methods that can create conditions for achieving the learning outcomes of science scientific concepts and components of the scientific process of science is to carry out learning in the laboratory in the form of a practicum.

Therefore, practical activities in the laboratory are used as a way for students to easily understand the material and can build knowledge by experiencing the process or experimenting themselves. The higher the involvement of students in practical activities in addition to the learning process in class, the higher the achievement of students' understanding and skills in accordance with their potential so that they can improve student learning outcomes.

Based on information obtained at Batu Putih State Middle School, student achievement in science subjects was still relatively low. This can be proven from the scores of the science practice exams, where the scores obtained by some students are still on the average KKM score, and some students even get scores below the KKM score.

The low-performance learning shown by the value of students who are still below the KKM can be caused by several factors. In general, the factors that influence student learning can be divided into two, namely factors intrinsic (from within the student) and extrinsic factors (from outside the student). Factors originating from students such as physical health, interest in learning, intelligence, learning motivation, student talents, cognitive abilities, and student attitudes towards subjects.

While factors that come from outside the student's self include family, physical and social environment, curriculum, teaching methods, teachers, learning media, facilities, and amenities. Therefore, good performance must bexternal factor affectingell. One of the external factors that affect learning achievement is the use of laboratory media. Laboratory media is an intermediary that is used for students to observe directly through practicum, which aims to stimulate students to learn. The existence of a laboratory is expected so that the learning process will be easier for students. However, during learning usage, the laboratory is not optimal. This can be seen from the lack of practicum in the laboratory given by science subject teachers. Teachers are still fixated on books and material explanations given to students, so the enthusiasm of students in practicing to directly observe the material explained by the teacher through practicum is low.

In addition to external factors that affect learning achievement, there are also internal factors. One of the internal factors that influence student achievement in science is learning motivation. Learning motivation is an encouragement that comes from within or outside a person so that it can lead to learning activities. The role of this motivation is very important to encourage students to obtain good achievement results. The existence of learning motivation can lead to enthusiasm for student learning. In the end, the optimal achievement will be achieved. But at the time of learning, each student's motivation in taking lessons is different.

There are some students whose enthusiasm for learning is high, which is shown by their enthusiasm in observing through high practicum; there are also those who have low motivation and complain when given science assignments by the teacher. In addition, there are some students who think that science is a difficult subject, so students' motivation to practice lab work in the laboratory is very low. If the motivation in student practicum is low and the use of laboratory media is not optimal, the learning achievement will be low.

Therefore, the author conducted research with the theme: "The Influence of Utilization of Laboratory Media and Motivation on Learning Outcomes of Class VIII Students in Science Subjects at Batu Putih Middle School." arch, it is possible to know in real terms the Effect of Laboratory Media in real termsand Motivation on Student Learning Outcomes.

THEORY

1. Definition of Laboratory

The laboratory comes from tTheplace to work." During its development, the wo during its developmentrd laboratory retained its original meaning, namely "a place of work" specifically for scientific research purposes. A laboratory is a room or room where practical or research activities are carried out, which are supported by a set of tools and a complete laboratory infrastructure, including water, electricity, gas facilities, and so on. (Hartinawati, 2015:3).

2. Laboratory Functions

Based on government regulation no. 5 of 1980, article 29 states that the laboratory

has the following functions: 1. To prepare supporting facilities for carrying out education and teaching in one or as a particular branch of science, technology, or art in accordance with the field of study concerned, and 2. To prepare supporting facilities to conduct research in one or various branches of technology or certain arts per the field of study concerned.

3. Laboratory Facilities

Regulation of the Minister of National Education No. 24 of 2007, laboratory room standards should be able to accommodate one study group. The minimum ratio of laboratory area is $2m^2$/learners. For study groups with 20 students, the minimum area of the laboratory room is 40 m^2. However, an office simulation room will require even more space.

4. Management of laboratories in schools

Laboratory management is a process of utilizing resources effectively and efficiently to achieve an expected target optimally by taking into account the sustainability of resource functions; Henri Fayol in Tawil (2016: 241) states that management should be carried out in relation to the elements or functions of managers, namely planning, organizing, giving the command, coordinating, and controlling.

5. Definition of Learning Motivation

Learning motivation accordingWahbah, (2015:127), is the whole, drives, needs, and similar forces that drive one's behavior. In a broader sense, motivation is defined as the influence of energy and direction on behavior, which includes: needs, interests, attitudes, desires, and stimuli. According to Winkel (in Epidemic, 2015 127), motivation is a motive that has become active at a certain moment, while motive is the driving force within an individual to carry out certain activities in order to achieve a certain goal.

6. Understanding of Learning and Learning Outcomes

According to Sudjana (2014: 28), learning is a process characterized by changes in a person. Changes as a result of the learning process can be shown in various forms, such as changes in knowledge, understanding, attitudes and behavior, skills, abilities and abilities, reaction power, acceptance power, and other aspects that exist in a person.

7. Factors Affecting Learning Outcomes

Slameto (2015: 54) states that the factors that influence learning outcomes can be classified into 2, namely: Internal Factors and External Factors.

METHOD

The type of research used in this research is research after *the fact*. Study *after the fact*s research where the independent variable occurs when the researcher first observes the dependent variable in a study. (Jusmawati et al. 2020: 3). This study uses a quantitative approach to the regression type because the results of the research are in the form of quantitative data about the effect of laboratory media learning and learning motivation on student learning outcomes in science education subjects. In this study, researchers wanted to see the relationship between the independent variables, namely the influence of laboratory media learning and learning motivation, with the dependent variable, namely student learning outcomes.

The variables in this study consist of independent variables and dependent variables.

The independent variable is the treatment variable whose effect will be assessed and affects the dependent variable. In this study, the independent variables were laboratory media (X1) and learning motivation (X2). The dependent variable is a factor that is influenced by the independent variable. In this study, the dependent variable is learning outcomes, expressed in Y. Data analysis techniques are used to test the hypothesis of the effect of laboratory media learning and motivation on student learning outcomes in science education using multiple linear regression analysis techniques.

RESULTS AND DISCUSSION

The Effect of Utilizing Laboratory Media and Motivation on Student Learning Outcomes in MIPA Subjects at Batu Putih Middle School.

Table 1 Test Results for the Coefficient of Determination:

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.811[a]	.657	.650	3.06336

a. Predictors: (Constant), MOTIVASI (X2), MEDIA (X1)

Based on the output of the test results in Table 4.12, it is known that the correlation value between laboratory media variables (X1) and motivation (X2) on student learning outcomes (Y) is 0.811. This value indicates that the influence of laboratory media and motivation on student learning outcomes has a strong correlation, and the relationship is positive because of the correlation value (R). The magnitude of the influence of laboratory media variables (X1) and motivation (X2) on student learning outcomes (Y) obtained a coefficient of determination of 0.657. The results of this test, when interpreted with the presentation of the value between laboratory media and motivation on student learning outcomes, is 0.657 or 65.7%, while the remaining 34.4% is influenced by other factors that affect MIPA learning outcomes at Batu Putih Middle School.

DISCUSSION

The effect of using laboratory media on student learning outcomes in MIPA subjects at Batu Putih Public Middle School.

Based on the results of single regression testing, it is known that the large permanent value is 14.379, which means that if the Media Laboratory (X1) value is 0, then the learning outcomes of students (Y) get a positive value of 14.379. Regression coefficient value at variable Laboratory Media (X1) is obtained at 0.345, which means if Laboratory Media experiences increase by 1%, the learning outcomes of students in variable Y have increased by 0.345.

In the laboratory media variable (X1) on student learning outcomes (Y), it is known that the value of the coefficient of determination is 0.650. The value of the coefficient interpreted by the presentation of the value between laboratory media on student learning outcomes is 0.650 or 65.0%, so after testing the hypothesis using the t-test, the value of t count = 3.629 and the value significance of 0.000 and the value of t table (0.025: 96) = 1.985 so that 3.629 > 1.985 which means that there is a significant influence from laboratory media on student learning outcomes in MIPA subjects at Batu Putih Middle School.

The test results of the first hypothesis show that laboratory media has a positive and significant effect on student learning outcomes. It identified that the better the practicum implementation, the better the learning outcomes of students.

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The Effect of Motivation on Student Learning Outcomes in Natural Sciences at Batu Putih State Middle School.

Based on the results of single regression testing, it is known that the constant value is 14.379, which means that if motivation (X2) is 0, then student learning outcomes (Y) get a positive value of 14.379. The regression coefficient value on the motivational variable (X2) is 0.370, which means that motivation is experienced an increase by 1%, and the learning outcomes of students in variable Y have increased by 0.370.

Onvariable motivation on student learning outcomes is known to be the coefficient of determination value of 0.650. The value of the coefficient is interpreted with the presentation of the value between motivation on student learning outcomes is 0.650 or 65.0%, so after testing the hypothesis using the t-test obtained the value of t count = 4.878 and the value significance of 0.000 and the value of t table (0.025: 96) = 1.985 so that 4.878> 1.985 which means that there is a significant influence of motivation on student learning outcomTheubjects at Batu Putih Midd show Based on the results of the first test, it shows that laboratory media has a positive and significant effect on student learning outcomes. It identified that the better the practicum implementation, the better the learning outcomes of students.

The Effect of Using Laboratory Media and Motivation on Student Learning Outcomes in Mathematics and Natural Sciences Subjects at Batu Putih Middle School.

In laboratory media variables and motivation on student learning outcomes, it is known that the magnitude of the influence of laboratory media variables and motivation on student learning outcomes obtained a coefficient of determination of 0.657. The results of this test, if interpreted with the presentation of the value between laboratory media and motivation on student learning outcomes, is 0.657 or 65.7%, while the remaining 40.1% is influenced by other factors that affect learning outcomes in Batu Putih Middle School students in the eyes MIPA lessons.

The results of calculations on the F test (table 4.17) show that the calculated f value is 91.159 and the f table value is 3.09 with df = 96 so that the calculated f value > f table value (91.159 > 3.09) means that there is a simultaneous effect or together between laboratory media variables (X1) and motivation (X2) on student learning outcomes (Y).

The results of this study note that laboratory media and motivation positively affect student learning outcomes. This shows that if laboratory media is used optimally with adequate facilities and is supported by strong motivation from students, students' learning outcomes will also be better.

Results study, This from both researchers and previous researchers above supports the results of research where laboratory media (X1) and motivation (X2) have an influence on student learning outcomes (Y).

Increase in value due to activities practiced in the laboratory, which is based on the use of laboratory equipment due to the motivation to learn.

This learning motivation is based on the existence of useful values that arise after value practicum activities' usefulness. This is a direct effect of matching theory with statements obtained through practical activities in the laboratory. All this spurs students to learn more and more and master everything that has to do with learning material and also material that is observed using laboratory equipment. These things make students' ability to master and remember back what they studied and saw so that they can give the right and correct answers during the exam. In addition to practical activities in

the laboratory, students will know for real based on their actions; thus, they are younger to remember and master material, especially when they study it again (Taek, 2017;2021).

CONCLUSION

1. The Utilization of Laboratory Media influences the learning outcomes of participants in class VIII on MIPA subjects at Batu Putih State Middle School. The single regression analysis shows that the t count has a value of 3.629, while the t table is 1.985. Because t count > t table (3,6291,985) and value its significance < α (0.000 < 0.05). The coefficient of determination (R Square) is 0.650 or 65.0%, so there is a significant influence between Laboratory Utilization Media on student learning outcomes at Batu Putih State Middle School.
2. There is an influence of Learning Motivation on learning outcomes among participants students in science subjects at Batu Putih State Middle School. The single regression analysis shows that the t count has a value of 4.878, while the t table is 1.985. Because t count > t table (4.878 > 1.985) and the significance value is < α (0.000 < 0.05). The coefficient of determination (R Square) is 0.650 or 65.0%, so there is a significant influence between Learning Motivation on student learning outcomes at Batu Putih Public Middle School.
3. There is an influence between Laboratory Utilization Media and Learning Motivation on learning outcomes among participants and students in science subjects at Batu Putih State Middle School.

SUGGESTION

1. Educators or teachers are expected to be able to utilize the equipment available in the laboratory as a learning resource in the MIPA learning process. Students are also expected to use laboratory media properly and correctly in the learning process to increase and expand their knowledge, learn to interact, and develop their abilities. In addition, for future researchers, it is suggested to find new things that have not been conveyed by the author in this paper regarding the influence of laboratory media on the learning outcomes of participants and students in MIPA subjects.
2. Educators or teachers are expected to better prepare themselves well before the learning process takes place, such as preparing lesson plans and preparing teaching materials. Teachers must motivate students, and students are expected to be actively involved in learning MIPA. In addition, for future researchers, it is suggested to find new things that the author has not conveyed in this paper regarding the influence of laboratory media on learning outcomes participants studied in IPA subjects.
3. Educators or teachers are expected to further improve their performance because, from the results of the daily assessment, some students still have not received a complete grade, and there are still students who score on the KKM average. Therefore, teachers need to pay attention to models and methods of learning so that student learning outcomes can increase.

REFERENCES

Arikunto, Suharsimi. 1999. *Dasar-Dasar Evaluasi Pendidikan.* Jakarta: Bumi Aksara.

Agus Suprijono. (2015). *Cooperative Learning.* Yogyakarta: Pustaka Belajar.

Amir, Z, & Risnawati. 2015. *Psikologi Pembelajaran Matematika.*Yogyakarta: Aswaja Pressindo.

Baharuddin., & Wahyani, E. N. 2015. *Teori Belajar dan Pembelajaran*.Yogyakarta: Ar-Ruzz Media.

Dimyati & Mudjiono. (2013). *Belajar dan pembelajaran*. Jakarta: Rineka Cipta. Depdiknas. 2003. *Undang-undang dasar RI No. tahun 2003. Tentang Sistem Pendidikan Nasional.*

Djaali. 2015. *Psikologi Pendidikan.* Jakarta: PT Bumi Aksara.

Fayol, Henry. *General and Industrial Management.* Diterjemahkan oleh Costance Storrslondon: Ravenoi Books, 2016.

Hadis, A. (2010). *Manajemen Mutu Pendidikan.* Bandung: Sinar Baru Algesindo.Cet. Ke-VIII.

Naaman RM (2007). *The Laboratory In Science Education: The State Of TheArt.* Journal Of Chemistry Education and Practice 8 (2):150–170.

Hartinawati. 2015. *Pengelolaan Laboratotium IPA.* Tangerang Selatan: Universitas Terbuka.

Kompri. (2016). *Motivasi Pembelajaran Perspektif Guru dan Siswa.* Bandung:PT Remaja Rosdakarya Offset.

Mahmud. 2012. *Psikologi Pendidikan.* Bandung: CV Pustaka Setia.

Pendiknas.2007. *Pendiknas No. 24 Tahun 2007 Tentang Standar Sarana dan Prasarana untuk Sekolah Dasar/Madrasah Ibtidaiyah (SD/MI), Sekolah Menengah Pertama/Madrasah Sanawiyah (SMP/Mts), dan Sekolah Menengah Atas/Madrasah Aliyah (SMA/MA).*

Rustaman, Y.N., dkk. (2003). *Strategi Belajar Mengajar Biologi.* Common textbook JICA IMSTEP. Bandung: FMIPA UPI.

Slameto. 2015. *Belajar dan Factor-Faktor yang Mempengaruhinya*. Jakarta:Rineka Cipta.

Raharjo. 2007. *Cooperative Learning Analisis Model Pembelajaran IPS.* Jakarta: Bumi Aksara.

Sobiroh, A. (2006). *Pemanfaat Laboratorium Untuk Meningkatkan Hasil Belajar Biologi Siswa Kelas 2 SMA Se-Kabupaten Banjarnegara Semester 1 Tahun 2004/2005*. Skripsi. Semarang: FMIPA Unnes.

Sanjaya, Winna. (2008) *Strategi Pembelajaran* Berorientasi *Standar Proses Pendidikan.* Jakarta: Kencana Predana Media Grouf.

Sudjana, N. (2014). *Penilaian Hasil Proses Belajar Mengajar*. Bandung: PT.Remaja Rosdakarya.

Taek Paulus. 2021. *Analisis Respons Mahasiswa Program Studi Biologi dan PPG Melalui Perkuliahan Online Selama Masa Covid-19.* Jurnal Inovasi Kebijakan.https://jurnalinovkebijakan.com/index.php/JIK/article/view/77

Tarmizi. (2005). *Model-model Pembelajaran Sains.* Jakarta: Galindo.

Tawil & Liliasari. 2016. *Manajemen Laboratorium.* Makassar: Badan Penerbit Universitas Negeri Makassar.

Widyarti. 2005. "pusat laboratorium sentral hayati" dalam http://www.scribd.com/doc/90475386/format-laporan-pengleab.

Wabash, Rohmalina. (2015) *Psikologi Belajar*. Jakarta: Rajawali Pers.

Yaman, E. (2016*).Pengoptimalan Peran Kepala Labor Dalam Menunjang Pembelajaran IPA di SMPN 7 Kubung. Jurnal* Penelitian Guru Indonesia. http://jurnal.iicet.org. Vol 1.