

Analysis of Implementation of Biology Practicum for SMA / MA in Sungai Beremas Sub-District, West Pasaman Regency

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Abstract - The purpose of this study was to: (1) find out the Biology practicum in class XI in the SMA-MA in Sungai Beremas District which included planning, implementation and evaluation processes, (2) knowing the obstacles of teachers and students in biology practicum in class XI SMA- MA in Sungai Beremas Subdistrict and knowing the constraints of teachers not to carry out practical activities. This research is descriptive research qualitative. The research data was obtained from the results of questionnaire analysis evaluating the practicum plan, interviews, questionnaires, constraints on practicum implementation for teachers and students. The results of this study are: (1) The results of the practicum planning questionnaire analysis by teachers at MAN 1 West Pasaman get 97.02% with very good criteria, practical planning at Sungai Beremas 1 Public High School gets a score of 74.29, practical planning at Muhammadiyah High School get a score 54.27 with less criteria, (2) The process of practicum implementation at MAN 1 Pasaman Barat and SMAN 1 Sungai Beremas needs improvement, especially in apperception, classroom management, time allocation, procurement of laboratories along with practical tools to support practical implementation, while the practicum process in Muhammadiyah High School it was not implemented because of limited learning time, laboratories and practicum supporting tools that did not yet exist, (3) Practical evaluations in MAN 1 West Pasaman could be implemented but only assessed cognitive aspects and evaluation of practicum at SMAN 1 Sungai Beremas could not be implemented due to time constraints, (4) the results of the constraint questionnaire analysis the experienced by the teacher in the practicum in West Pasaman MAN 1 got an average score of 37.96 with less constrained criteria and the results of the questionnaire analysis of constraints experienced by Sungai Beremas 1 High School teachers got an average of 57.85 with sufficient constrained criteria, (5) The results of the obstacle questionnaire analysis faced by students during the practicum in MAN 1 West Pasaman get an average score of 57.42 with criteria quite constrained and the results of the questionnaire analysis of obstacles faced by students when taking practicum at SMAN 1 Sungai Beremas get an average of 57.06 with criteria quite constrained .

Keywords - Implementation, Practical Biology, SMA / MA Sungai Beremas.

I. INTRODUCTION

Biology is the study of living things. Biology is obtained not only from theory but also from observations or investigations using scientific methods. At school, observations in biological sciences are applied in the form of practical activities. Through practical activities, students can improve their abilities analysis, communication and being able to interpret the results of their observations (Widodo and Rahmadiningsih, 2006 and Pertiwi, 2017). Practical activities

can also provide opportunities for students to experience phenomena directly in biology so that they can help increasing students' understanding of the material provided by the teacher so that learning outcomes and student learning motivation also increase (Syaodih, Rustaman, Rahman, and Poedijiadi, 2003 , Tuan 2005 and Bayram 2013).

Biological practicum activities can be carried out in the laboratory. According to Wirjosoemarto (2004) laboratories can be interpreted as space and place to conduct

experiments and research. Practicum implementation in the laboratory will be more effective if the equipment, materials and other infrastructure are sufficient to support practical activities. This is in accordance with Permendikbud (2013: 6) and Permendiknas (2007: 45) which states that good practicum must be supported by adequate infrastructure, such as the existence of a junior / senior high school science / biology laboratory.

Practicum implementation is generally divided into three stages which include the preparation, implementation and evaluation phases. Anggraini (2012) further explained that the preparation stage was carried out to minimize the practical failure that would be carried out. The implementation stage practice of students can read practical guide to implement practical activities in accordance with the instructions given teachers, while teachers supervise the process of practical implementation. The teacher can provide input, guidance for students in carrying out practicum at this stage. The teacher's next activity is to follow up by asking students to clean the tools and materials, store the equipment that has been used, discuss the problems found by students during the practicum, ask students to make lab reports and conduct evaluations.

The practicum should run well because the government has tried to provide the facilities and infrastructure needed to carry out the practicum, but there are still many schools that have not been able to carry out the practicum properly because of limited facilities, infrastructure or other things.

The results of researcher interviews with class XI students in SMA / MA at Sungai Beremas in West Pasaman district on October 2, 2017 show that not all material that should be practiced can be carried out and tends to be rarely implemented well because of the many obstacles encountered in practicing. The results of student interviews is not much different from the biology teacher interviews were held on 1 to 2 November 2017 stating that the implementation of biology practical implementation is still relatively low. This is due to the constraints on the facilities and infrastructure in the laboratory that are inadequate, the absence of practicum guides, the absence of a permanent practicum schedule and limited learning time.

Further research to find out the problems of the implementation of biological practicum in the SMA / MA in

the Sungai Beremas sub-district of West Pasaman Regency is needed especially to analyze the obstacles faced by students and teachers in implementing biology labs related to the planning, implementation and evaluation process.

II. RESEARCH METHODS

This research is a descriptive study using qualitative data collection techniques. This research was conducted in class XI of SMA-MA in Sungai Beremas Sub-district in the second semester (two) of the 2017/2018 school year. Data obtained from the results of the questionnaire analysis evaluating the practicum plan, interview, questionnaire constraints on practicum implementation for teachers and students.

Data is expressed in percentage form and analyzed using the following Purwanto (2009) formula.

$$P = \frac{\text{Amount of the score}}{\text{amount the high score}} \times 100\%$$

Information:

P = validation / readability value

The results mean percentage results of questionnaire analysis questionnaire assessment lesson plan (RPP) and questionnaires about constraints faced by teachers and students have been analyzed using the formula above, then categorized according to criteria adapted from Arikunto (2002) the following:

81 - 100%	= Very constrained
61 - 80%	= Constrained
41 - 60%	= Quite constrained
21 - 40%	= Less constrained
0 - 20%	= Not constrained

III. RESULTS AND DISCUSSION

1. Planning

The results of the study show that assessment Practical planning in MAN 1 Pasaman Regency has reached a very good category, the assessment of practicum planning at SMAN 1 Sungai Beremas has been well categorized and assessment of practical planning at Muhammadiyah High School entry in categories is still lacking (Table 1).

Table 1: Results of Evaluation of Practicum RPP Class XI SMA / MA District of Sungai Beremas

Aspects observed	Assessment Value of Implementation of Practical Learning					
	MAN 1 West Pasaman		SMAN 1 Sungai Beremas		High school Muhammadiyah	
	%	Criteria	%	Criteria	%	Criteria
Formulation of objectives learning	100	Very good	93.75	Very good	75.25	Well
Selection of practicum material	75	Well	68.75	Is being	56.25	Less
Formulation of learning strategies	89.29	Very good	71.43	Well	60.71	Is being
Adjustment of practicum media	75	Well	62.5	Is being	54.16	Less
Practical evaluation planning	95.83	Very good	75	Well	25	Less
Average	87.03	Very good	74.29	Well	54.27	Less

Based on Table 1 above it can be seen as a whole that the practicum plan in MAN 1 river packaged is very good criteria with an average value of 87.03. Hal suggests that the lesson plan created by the teachers already meet the assessment criteria. RPP practicum made by biology teachers in MAN 1 West Pasaman has been well prepared and is in accordance with KTSP so that the practicum can be more directed and the purpose of practicum is also carried out can be achieved. According to the Education Personnel Directorate (2008) the learning objectives can be achieved if the teacher can prepare learning well and directed through the learning implementation plan (RPP). A well-made lesson plan will limit teachers from improvising that are not needed so that they leave the purpose of learning.

Assessment of learning planning in SMA 1 Sungai Beremas obtained an average score of 74.29 with good criteria. This shows that the lesson plan prepared by the teacher at SMAN 1 Sungai Beremas is good but still needs improvement, especially in the aspect of selecting practical material and adjusting the media used to support practical activities. The teacher should include and choose the right media that will be used in the practicum because the media used is one of the components observed to assess the performance of the teacher in planning the chase (Directorate of Education Personnel, 2018)

Practical planning assessment in Muhammadiyah MAN received a score of 54.27% with less criteria. This shows that planning carried out by biology teachers in Muhammadiyah High School still needs improvement, especially in the form of learning strategy formulation to get moderate criteria because the learning process steps are not systematic, there is no enrichment and there is no practical practice so there is no way of organizing students to participate in practicum's. According to Ahmadi and Supriono (2004) enrichment needs to be done

to help students repeat and deepen their knowledge so that more knowledge is gained and students do not experience difficulties in learning the next topic. The practicum media aspect that is used is lacking because there is no realization of practical activities. According to Sudjana (2009) learning media is very necessary to achieve learning goals and help learning more effectively and efficiently.

2. Implementation

The observation results of practicum implementation in MAN 1 West Pasaman show that the teacher does not explain the importance of practicum to students so that students only know the facts, concepts and principles without knowing the application of the practicum in daily life. Permendiknas No. 22 of 2006 concerning competency standards has explained the importance of explained the urgency of practicum which is carried out to students, so that the practicum is carried out not only to gather facts, concepts and principles but is expected to be a vehicle for students to learn themselves and their environment and their application in daily life. Another finding in the field is the lack of facilities and infrastructure to support practical activities such as inadequate laboratories and inadequate practical equipment. Permendiknas No. 24 of 2007 concerning the minimum criteria for facilities and infrastructure that must exist in a biology laboratory including the availability of laboratory space as a place for carrying out practical activities equipped with adequate special equipment. Based on this it is clear that MAN 1 Pasaman Barat still needs to complete the practical tools needed to support practical activities.

Other observations found were the low interest of students in practicing. Some of the rest are not enthusiastic in carrying out the practicum and tend to be passive. According to Schunk et al (2002), Lin et al (2004). Aikenhead (2006) and Bennet et

al (2005) students 'lack of learning can be caused by students' perceptions that learning is carried out is meaningless, does not suit students 'interests, or there is no connection with students' daily lives and especially the student's perceptions are reinforced by the monotonous teaching and learning process as teachers lecture too much while students listen passively resulting in boredom in the learning process.

The results of the observations of practicum implementation at SMAN 1 Sungai Beremas show that teacher's performance in carrying out lab work is still lacking because they are less able to allocate time and coordinate students who lack focus and are not enthusiastic in carrying out lab work. This is in accordance with the results of Cheung's research (2011) which suggested the difficulties of teachers in implementing practicum including insufficient learning time, crowded classrooms, poor classroom management and teacher concerns about misconceptions. According to Allen (2010) the skills that must be possessed by the teacher so as not to occur above are the skills of the teacher in managing the class. Further, Allen explained that the teaching strategies and organizational structure to the learning process effective and productive, allocating a good time, organizing students in such a way is needed so, instructions are given to students can be accomplished in accordance expectancy.

The results of other studies found in the field are the lack of skill of students in using practical tools and the lack of tools needed in carrying out lab work. Teacher skills in classroom management when practicum are needed to help students develop the ability to use practical tools, provide conducive conditions that allow students to work, study and help students achieve the desired results.

The process of implementing biology labs in Muhammadiyah High School cannot be realized in accordance with the RPP because of the absence of laboratories and tools

and materials that support the implementation of practicum. This is very unfortunate considering the laboratory can help improve students' understanding of concepts so that the expected learning outcomes can be achieved. This is in accordance with the results of the Octavia (2012) study which shows that there is a positive relationship between the state of the laboratory and student learning outcomes, meaning that the better the state of the laboratory, the better student learning outcomes. In addition, the use of laboratories that are quite intense will help improve student learning outcomes.

3. Evaluation / assessment of the results of practicum.

Evaluation / assessment of the results of the practicum carried out by teachers in West Pasaman MAN 1 in the form of assessment of the cognitive domain only while the psychomotor and affective domains were not assessed at all. Evaluation is done by asking again what has been done by students when practicing and the results they get without preparing the questions that will be asked beforehand. The evaluation cannot be carried out by the teacher at SMAN 1 Sungai Beremas because of the limited time allocation during the practicum. Article 25 paragraph 4 Government Regulation Number 19 of 2005 concerning National Education Standards explains that graduate competencies include knowledge and skills. This means that in learning needs to be carried out an assessment of attitudes (affective), knowledge (cognitive), skills (psychomotor) and not just assessing one of them.

4. Constraints faced by the teacher and student when carrying out the praktikum

The results of the teacher obstacle analysis questionnaire in the implementation of the research practice showed that the biology teacher in MAN 1 Pasaman Barat as a whole was less constrained in carrying out the practicum and the biology teacher at SMAN 1 Sungai Beremas was quite constrained in carrying out practicum (Table 2)

Table 2. Constraints Faced by Teachers in Implementing Practicum

Obstacles	Constraints faced by teachers				Average
	Teacher of MAN 1 West Pasaman		Teacher of SMAN 1 Sungai Beremas		
	%	Criteria	%	Criteria	
Planning	37.5	Less constrained	50	Constrained enough	43.75
Implementation Process	43.05	Constrained enough	56.94	Constrained enough	50
Evaluation	33.33	Less constrained	66.6	Constrained	49.96
Average	37.96	Less constrained	57.85	Constrained enough	47.91

Based on Table 2 above it can be seen that biology teacher class XI in MAN 1 West Pasaman obtained an average score of 37.98 with less constrained criteria. This shows that the teachers at MAN 1 Pasaman Barat did not experience significant obstacles in carrying out the practicum.

This is in line with the field observations when a biology teacher in MAN 1 West Pasaman implement practical constraints faced by teachers in implementing the practicum is implementation constraints such as the lack of laboratory staff that can help provide tools and materials so that the practical implementation becomes fluent and constraints in carrying out evaluation of practicum activities because of the limited time when practicum is complete and the difficulty of evaluating in the psychomotor domain when the practicum takes place. Another obstacle faced by teachers is the difficulty of coordinating students to focus on practicum. According to Rohani (2004) the difficulty of coordinating students can be attributed to the lack of teacher skills in classroom management, so prevention measures are needed by providing good physical and socio-emotional conditions so that students can learn safely, comfortably and conducive. Another action that teachers can take is to improve student attitudes that deviate and undermine the optimal conditions for the teaching and learning process.

Based on Table 2 above, it can also be seen that teachers at SMAN 1 Sungai Beremas show that teachers in practicum planning as a whole get a score of 57.85% with criteria quite constrained.

The percentage results above are also supported by the obstacles experienced by the biology class XI SMAN 1 Sungai Beremas teacher who were found by the author while carrying out the research. Teachers find it difficult to m eng allocation

of time in accordance with the stages of practical implementation. The time allocation that is usually given is often insufficient to carry out a practicum even though the teacher's ability to allocate time is needed so that students continue to feel comfortable learning without feeling rushed to carry out the practicum. This is in line with the statement of Siswanto (2010) which states that the teacher's skill in allocating time is needed to provide a sense of comfort for students to follow and understand the skills and competencies taught so that learning objectives can be achieved.

The results of other studies found at SMAN 1 Sungai have the teacher experiencing obstacles in practicum because there is no complete tool to support practical activities and the unavailability of laboratories that can be used at any time because the laboratories are combined with other science subject laboratories. Another obstacle experienced by the teacher in carrying out the practicum is the absence of laboratory assistants who can help provide tools and materials so that the implementation of the practicum becomes not smooth. According to Permendiknas No. 24 of 2007 concerning the minimum criteria for facilities and infrastructure that must exist in a biology laboratory including the availability of laboratory space as a place for carrying out practical activities equipped with adequate special equipment. Based on this, it is clear that SMAN 1 Sungai Beremas also still needs to complete the practical tools needed to support practical activities.

In addition to examining the constraints of teachers in carrying out practicum, this study also examines the obstacles faced by students in carrying out lab work. Data constraints faced by students when downloading g practicum follow from analysis of the student questionnaire that covers all aspects of planning, implementation and evaluation process. Results da ta can be seen in the following Table 3

Table 3 . The Constraints experienced by students when the Practicum

Practical Activities	Constraints faced by students						
	MAN 1 West Pasaman				SMAN 1 Sungai Beremas		Ket
	XI IPA 1		XI IPA 2				
	%	Criteria	%	Criteria	%	Criteria	
Planning	58.60	Constrained enough	58.22	Constrained enough	59.29	Constrained enough	
Implementation process	67.18	Constrained	58.91	Constrained enough	55.79	Constrained enough	
Evaluation	48.47	Constrained Enough	44.08	Constrained enough	56.11	Constrained enough	
Average	57.42	Constrained enough	53.74	Constrained enough	57.06	Constrained enough	

Table 3 shows that students of class XI IPA at MAN 1 Pasaman Barat and SMAN 1 Sungai Beremas overall gain their value respectively 57.42, 53.74 and 57.06 with the criteria fairly constrained. It shows that students are still constrained in planning, carrying out and practicum evaluation. The basic problems experienced by students in both schools are the same. The majority is constrained by planning and implementation such as the absence of practical guidelines.

This is also supported by the observation time practicum takes place, seen students do not read the material that will be in practicum or not the user guide practicum so students have difficulty prepare before practicum, even though practicum instructions are important things that must be present in carrying out the practicum. This is in line with the Margunayasa and Riastini (2014) statement which states that practicum is a basic thing needed by students in practicum so that practicum can run smoothly and students can better master the skills and concepts given by the teacher

Another obstacle seen in MAN 1 Pasaman Barat and SMAN 1 Sungai Beremas from the results of the observations was that the students were not motivated in carrying out the practicum because the results of student observations were not assessed and only discussed. According to Suprihanto (2009) the assessment of work results and the assessment of knowledge concepts are needed to help students improve work performance by knowing strengths and weaknesses in themselves, so that in the future students can develop their strengths and overcome their weaknesses.

In addition to the obstacles faced by teachers and students in the practicum there are more obstacles experienced by teachers and students who do not carry out lab work. This obstacle was found in the Muhammadiyah High School. Biology subject teachers in the high school revealed the reasons why they were not practiced because of the difficult allocation of time and laboratories and practicum tools and supporting materials. According to Asrori (2003) the teacher must be able to develop a creative mindset when faced with problems in learning so that solutions can be found and learning can take place. Furthermore, Masnipal (2013) explains that creative teachers will always be highly committed to their role as teachers so that whatever happens the teacher will try their best so students are interested in learning. Based on the quotation above, the teacher concerned needs to be more creative in addressing the problem of the absence of a laboratory, tools and lab materials with other alternatives that enable students to practice.

IV. CONCLUSION

The conclusion of this study is as follows.

1. The results of the practicum planning questionnaire analysis by teachers at MAN 1 West Pasaman received 97.02% with excellent criteria, practicum planning at Sungai Beremas 1 Public High School got a score of 74.29, practical planning at Muhammadiyah High School got a score of 54.27 with less criteria.
2. The process of practicum implementation in MAN 1 Pasaman Barat and SMAN 1 Sungai Beremas still needs improvement, especially when teachers give apperception, class management so students are eager to practice, allocate time, procure laboratories along with incomplete practicum tools. The practical implementation process at Muhammadiyah High School is not carried out in accordance with the RPP
3. Practical evaluations at MAN 1 West Pasaman can be implemented but only assess cognitive aspects. Practical evaluation at SMAN 1 Sungai Beremas cannot be carried out due to time constraints.
4. The results of the questionnaire analysis of constraints experienced by teachers in practicum in MAN 1 West Pasaman get an average score of 37.96 with less constrained criteria and the results of the questionnaire analysis of constraints experienced by Sungai Beremas 1 High School teachers get an average of 57.85 with quite constrained criteria.
5. The results of the questionnaire analysis of constraints faced by students during the practicum at MAN 1 Pasaman Barat obtained an average score of 57.42 with criteria quite constrained and the results of the questionnaire analysis of constraints faced by students while practicing at SMAN 1 Sungai Beremas gaining an average of 57, 06 with criteria quite constrained. There is no implementation of practical activities at Muhammadiyah High School because of the difficulty of teachers allocating time, the absence of laboratories, tools and supporting materials for practical activities.

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