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The Implementation of Senior High School Biology Practicum in Batang Regency

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Abstract

The application of Curriculum 2013 emphasizes more on the scientific approach. Scientific approach can be realized by implementing practicum aimed at developing various domains of learning objectives, such as attitude, skill, and knowledge. This study aims at analyzing the relationship between human resource readiness factors, infrastructure, curriculum, and practicum implementation with the enforcement of senior high school biology practicum in Batang regency. This study employs quantitative approach particularly survey method. The sample are taken by using nonprobability sampling technique, namely purposive sampling, sample of 6 public and private classes of senior high schools. In the process of analysis, the researcher analyzed the data about factors obtained by using path analysis and correlation analysis. Based on the path analysis, it can be concluded that there is a correlational relationship between the factors that influence the implementation of high school biology practicum in Batang Regency.

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INTRODUCTION

Basic The 2013 curriculum is a curriculum that provides opportunities for students to be active in learning both inside and outside classroom, so that the role of the teacher is more likely as a facilitator not a center for learning activities. The application of 2013 curriculum aims to facilitate schools as a formal educational institutions in order to increase their role in developing the competence of students' attitude, knowledge, and skills in an integrated manner (Irianti & Nurcahyo, 2016).

Regulation of the Minister of Education and Culture No. 65 of 2013 about standard process of 2013 curriculum emphasizes more on scientific approach. Scientific approachcan be realized by implementing practicum, which is aimed at developing various domains of learning objectives, such as attitude, skill, and knowledge.

The practicum carried out in the laboratory in biological learning has considerable benefit and experience for students in three domains of learning. In cognitive domain, lab work provides an advantage in helping students' comprehension. In affective domain, lab work can train students' scientific attitude. In psychomotor domain, lab work can train students' skills in using tools and materials.

Practical activities will enable students to get a real description of accepted theory in the class. Practicum will be more effective to improve students' skills in observation and as a means of training in using the equipment.

According to Fazio &Volante (2004), practical activities or research in laboratory become a significant component in science education.The laboratory is design to complete the learning activities in the classroom that give students an opportunity to participate in the process of cognitive, physical, and social inquiry. Consequently, practical activities must be supported with infrastructure of biological laboratory that should be appropriate with the minimum standards for the laboratory in the National Ministry of Education Regulations No.24 of 2007.

Based on the literature study from various journal, there are several factors that play a role in the implementation of biology practicum. Hasruddin & Rezeqi (2012) state that factors that played a role in the practicum activities include the frequency of practical implementation, student interest toward practicum, time of practical implementation, and preparation as well as practical implementation. While Khamidah& Aprilia (2014) declare that factor that played a role in the practicum activities are preparation and implementation that includes teachers, students, laboratory assistant, and laboratory infrastructure. Furthermore, Olajide et.al. (2017) explain that several factors that played a role in the practicum activities include human resources and the availability of laboratory facilities and infrastructure.

Preliminary studies have been conducted to obtain an overview of the implementation of biology practicum at 10 schools in Batang regency (including public or private high schools) on August 2019. As a result, all teachers strive to perform biological practices on appropriate materials both in the laboratory and outside the laboratory. There are schools that do not have a biology laboratory, so the activities that should be carried out in a biology laboratory are carried out in classes using only tools and materials. The percentage of schools in Batang regency that already have a biology laboratories are 50%, whereas those that already have laboratories but still combined between biology, chemistry, and physics laboratories are 40% and schools that do not have laboratories are 10%. In addition, from those 10 schools that already have laboratories are 50%. Besides, there are unqualified biology teachers about 20%.

Based on the explanation above, it indicates that the implementation of biology practicum in schools is said to be well implemented and have a certain quality can be seen from several factors. Aside from adequate facilities and infrastructure, human resource factor (which included biology teachers, headmaster, and laboratory workers), other factors include the compatibility of the practicum material or topic with related basic competence, the frequency of practicum, and the process of its implementation. The objective of this study is to analyze the relationship between these factors toward the implementation of senior high school biology practicum in Batang regency.

METHODS

This study employed quantitative research particularly survey method. The populations in this

study are all public and private senior high schools in Batang regency for amount 25 schools, while those which have science majors for amount 19, then from the whole that will be sampled as many as 6 schools namely public or private high schools that have biology laboratories. Schools that will be sampled are public high school 1 Bawang, public high school 1 Batang, Wahid HasyimTersono high school, public Islamic high school Batang, private Islamic high school Limpung and Sunan Kalijaga islamic high school Bawang.

The data are collected from various data sources on each of the contributing factors, including the readiness of human resources factors (teachers, headmaster, laboratory workers, and students), adequate facilities and infrastructure factors (the compatibility of laboratory with standardization and management of biology laboratory), implementation factors (the process of practicum activities) and curriculum factors (the compatibility of practicum material and frequency of practicum activities).

The researcher used survey method as the technique of collecting the data. It is done through opinion trail, observation, interview, document analysis, and documentation. Furthermore, the instrument used in this study are questionnaire, observation sheet, interview sheet, and document analysis sheet. The data were analyzed by using path analysis and correlation test with SPSS 23.

FINDINGS AND DISCUSSION

The result of data analysis is data about the readiness of human resources factors, availability of facilities and infrastructure factors, curriculum factors, and implementation process factors. The total of data factors obtained from each schools is further recapitulated to an average of percentage.

Table 1. Data on the Readiness of Human Resources Factors

School Name	Readiness of Human Resources	Category
SMAN 1 Batang	89.82	Very good
SMAN 1 Bandar	93.48	Very good
MAN Batang	69.43	Good
MA Suka Bawang	69.27	Good
MAM Limpung	62.14	Good
SMA WH Tersono	60.97	Good

Table 2. Data on the Availability of Facilities and Infrastructure Factors

School Name	Availability of Facilities and Infrastructure	Category
SMA N 1 Batang	84.81	Very good
SMA N 1 Bandar	84.26	Very good
MAN Batang	49.5	Not Good
MA Suka Bawang	73	Good
MAM Limpung	45.88	Not Good
SMA WH Tersono	37.17	Not Good

Table 3. Curriculum Factor Data (the compatibility of material and frequency of practicum activities)

School Name	Percentage	Category
SMA N 1 Batang	68.57	Good
SMA N 1 Bandar	48.57	Adequate
MAN Batang	31.43	Not Good
MA Suka Bawang	45.71	Adequate
MAM Limpung	42.86	Adequate
SMA WH Tersono	25.71	Not Good

Table 4. Implementation Factor Data

School Name	Percentage	Category
SMA N 1 Batang	98.43	Very Good
SMA N 1 Bandar	95.31	Very Good
MAN Batang	84.29	Very Good
MA Suka Bawang	90.32	Very Good
MAM Limpung	95.32	Very Good
SMA WH Tersono	74.23	Good

Table 5. Recapitulation of Data on the Level of Implementation of High School Biology Practicum in Batang Regency

School Name	Percentage	Category
SMA N 1 Batang	85.41	Very Good
SMA N 1 Bandar	80.41	Very Good
MAN Batang	58.67	Good
MA Suka Bawang	69.58	Good
MAM Limpung	61.55	Good
SMA WH Tersono	49.52	Not Good
Implementation level	67.52	Good

Table 6. The Results of Path Analysis

Model	df	Sig.
Regression	4	0.000
Residual	1	
Total	5	

Table 7. The Results of Correlation Analysis

Variable	Sig.	Result
Human Resources and Facilities Infrastructure	0.015	There is a correlation
Facilities Infrastructure and Curriculum	0.036	There is a correlation
Curriculum and Implementation	0.026	There is a correlation

Table 1, 2, 3, and 4 is the recapitulation of data factors, while table 5 is the recapitulation of biology practicum implementation data. Based on these data, then further analyzed with the results listed in table 6 and 7. Table 6 shows that the significance level is 0,000 where the value is less than 0,005, so it means that all these factors have a significant effect on the implementation of biology practicum. Meanwhile, table 7 shows the analysis results on the correlation between factors where all the significant value is less than 0, 05 which means that there is a correlation between the factors that influence it.

Therefore, it can be written that based on the data analysis these factors directly affect the biology practicum implementation and there is a correlation between the factors that influence it. The hypothetical proposition is depicted in the flowchart as follows:

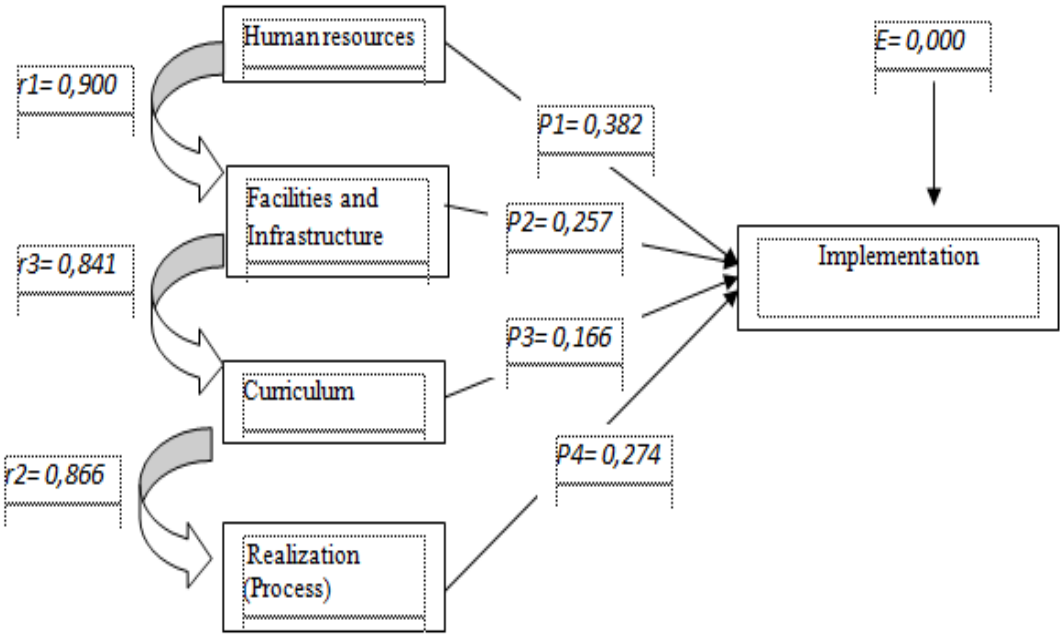

Figure 1. Flowchart of the relationship between factors on the implementation of biology practicum

Based on the analysis result and have been depicted through the flowchart in picture 1, the result shows that the analysis is included into correlation path model. Correlation path is characterized by correlation model between free and bound variable, and also regression model between free variable and bound variable.

The flowchart above shows that all factors directly affecting the implementation of senior high school biology practicum in Batang regency and there is a correlation between the affected factors.

a. The influence of factors on the implementation of biology practicum

Based on the results of data analysis and the diagram shows that there is a direct influence on the implementation of senior high school biology practicum without intervening variable or mediation. All the factors are directly influenced on the implementation of senior high school biology practicum. Those factors among others: the readiness of human resources factors, the availability of nature resources(facilities and infrastructure), implementation factors and curriculum factors. This is meant that all those factors together affect the implementation of senior high school biology practicum in Batang regency.

On the other hand, if those factors are not or less fulfilled, then those things will be an obstacle in the practicum implementation, so it is less optimal. As Rahman et. al. (2015) state that the main problem in the practicum implementation is lack of supporting facilities in the laboratory, followed by a lack of management and laboratory management, lack of teacher readiness, lack of supporting

facilities due to lack of allocation and specifically allocated to the provision of laboratory facilities, so that in order to complete the facility needs, the school should get around the existing budget to be able to complete the needs of laboratory facilities, lack of readiness of laboratory assistants, these things are due to lack of training activities that received by laboratory assistants, lack of time allocation for teachers to prepare the instruments, materials, and students' worksheet for practicum.

b. The relationship between influential factors

Based on the data analysis, statistically and have been depicted in the diagram shows that there is a relationship between influential factors on the implementation of senior high school biology practicum in Batang regency. This is accordance with the result of analysis that has been analyzed. The readiness of human resources factors include many parties (teachers, headmaster, laboratory assistants, students) influencing other factors. The headmaster who has the authority on the policy for supplying the laboratory material equipment and give moral support or others means that it affects the availability of facilities and infrastructure and the process of implementing biology practicum. On the other hand, a teacher with good competence will prepare and allocate time and adjust the related basic competence into its implementation which takes place in a conducive way. The laboratory assistant also has an important role in assisting the fluency in practicum and laboratory management, so that the facilities and infrastructures is well maintained. On the other side, students who have motivation and interest towards biology lesson especially on practicum activities, they will comfortably perform the practicum activities so that the learning activities is more meaningful and conducive, as stated by Satriani et. al. (2018) that practicum activities is the process of learning that provides the real interaction to students through their five senses. Those things will give the experience in learning science that can be felt immediately, so that the practicum activities has an important role in realizing motivation and interest in learning. This is in line with Fitrianti & Lufri (2020) that the practicum activities gives more knowledge, experience, develop a scientific attitude, so that the students comprehend the material, students get a real experience so they are motivated to learn.

Based on the explanation above, it shows that there is a relationship between influential factors on the implementation of biology practicum. This is in line with Oktavia, et. al. (2012: 4) that based on the facts in the field that the quality of practicum activities in biological laboratory is influenced by several factors, such as teacher factor and laboratory facilities. The teachers occupy a central position because their role determine the implementation of education in the school. Teachers should have ability in their effort to improve the process and the students' learning outcomes, because the teachers' competence can influence the quality of teaching.

CONCLUSION

Based on the analysis and discussion of this present study, it can be concluded that there is a correlation between factors that affect the implementation of senior high school biology practicum in Batang regency.

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