Analysis of Biology Learning Problems in Urban Schools and Their Solutions

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Abstract

The achievement of learning objectives can be disrupted because of issues that occur in learning so that learning activities cannot be carried out optimally. As a result, it is important to identify the issues arising in order to select the most suitable solution to resolve them. The study aimed to identify problems with learning urban biology at one of the senior high schools in Jakarta and to find answers to those problems. The research method is using a case study method; a type of research that involves an in-depth examination of one individual, a group, an organization, and so on over a set period of time. The study's data collection methods included observation and interviewing. The study's findings reveal the following issues in learning biology at one of the senior high schools in Jakarta: 1) The biology program's implementation on practical indicators, 2) The redesigned 2013 curriculum, which is considered inconvenient for students and teachers to use, 3) Learning media selection and 4) Student learning interest. The solution to the problems of learning biology at senior high school in Jakarta is to understand the concept of implementing the 2013 curriculum so that it can provide innovative learning methods, can optimize the learning media that are being used, and understand the cognitive development of students with good communication skills.

Keywords: Learning Biology, Learning Media, Pandemic, Problems, Urban Schools

INTRODUCTION

Education gives hope for individuals to improve the quality of life from various aspects to be better in the future. Education performs a critical role to improve the value of human resources so that they can develop a nation and state to be more advance. In education, a person will learn how to develop the character they have. This is done with the hope that in everyday life, a person is able to utilize the knowledge he has acquired (Chatib, 2017).

If we compare it with developed countries or other developing countries, the condition of science education in Indonesia is relatively left behind, especially in the field of scientific literacy. Organization for Economic Co-operation and Development or which is abbreviated as the OECD in 2019 defines scientific literacy as a person's ability to apply ability to ask questions, establish contemporary knowledges, convey scientific explanations, draw conclusions based on scientific clues that have been given, and be able to build references in meaningful thinking, based on foundations and goals so that they are involved in handling problems and ideas related to science.

When learning biology, students tend to only be given basic theories about biology without being accompanied by practicum which may be able to create new theories from students who have high curiosity. Practicum is very important in biology lessons because it
can provide opportunities for students to practice the scientific method. Students who follow
the practicum will also get greater certainty about certain concepts than those who only learn
from textbooks and teachers, can enrich their experience, gain a scientific mindset, and retain
learning outcomes longer (Rustaman, 2011).

According to Atnur (2015), the content of the curriculum is too dense and broad where
learning activities are regulated and controlled by the curriculum. The density of the
curriculum requires teachers to pursue curriculum targets that aim to be able to be completed
in accordance with a predetermined time. This causes the teacher to not have enough time to
apply various learning models.

Based on the evaluation that has been carried out, the results show that a dense
curriculum causes an incompatibility of curriculum material with the abilities of students.
Students are required to be able to understand the learning that has been contained in the
curriculum with a short enough time so they don't get much time to do practicum. Even
though practicum is very useful in testing and increasing students' knowledge of the material
they have learned (Chatib, 2017).

Based on the description above, we decided to go directly to the field in identifying
the abilities of students at MAN 18 Jakarta in understanding biology material. Going directly
to the field makes it easier for us to see firsthand why students cannot understand biology
material properly. In addition, we also get more valid data and can help find a good solution
for the school in learning biology.

During the learning pandemic at all schools are conducted online. This aims to reduce
the spread of the Covid-19 virus in the school environment. Online learning accepts and
distributes theory learning from teacher to student or vice versa. One of the subjects taught
online is biology. The platforms used during online biology learning are zoom meetings,
google meetings, and quizizz. However, online learning also makes it difficult for students
who live in villages, due to limited access to technology. The internet signal in the village is
definitely not as strong as the internet signal in the city so that students who live in the village
often experience learning material being left behind.

In addition to the existing background, it is certain that this research has objectives
that must be achieved. The purpose of this study is to identify the problems of urban biology
learning at one of the senior high schools in Jakarta, and find solutions to them problems of
learning Biology at one of the senior high schools in Jakarta.
METHOD

This research uses a type of case study, which is a research model that focuses on exploring a "bounded system" of a special case or only some cases in detail with in-depth data searches (Creswell, 2015). It aims to get a complete and thorough description of an institution. The end result of the case study is in the form of data which will then be analyzed to produce a theory.

This research was conducted at one of the senior high schools in Jakarta which is located at Jalan Rawa Bahagia No. 6, RT.7/RW.4, Kel. Pondok Kopi, Kec. Duren Sawit, City of East Jakarta, Special Capital Region of Jakarta. The research was conducted in the even semester of the 2021/2022 school year.

Subjects who participated in this study were biology teachers at one of the senior high schools in Jakarta. This study uses data collection techniques through observation and interviews. Observation is a specific activity through observing something through the eyes or by using all the senses, observation consisting of attention to an object can be said to be direct observation to the problem to be studied (Arikunto, 2009). With the research instrument in the form of an interview guide which is an interaction between the interviewer and the interviewee that aims to obtain some information.

In qualitative data analysis, the method used is to examine the data according to the quality of the data to solve the main research problems which will then be explained in detail and supported by research results and appropriate theories.

RESULTS AND DISCUSSION

Identification of the problems in learning biology at the urban school Madrasah Aliyah Negeri (MAN) in Jakarta during the Covid-19 pandemic era was carried out by interviewing a biology teacher. The results of the interview showed that there were several problems in learning biology at one of the senior high schools in Jakarta, namely teachers having difficulties implementing the biology program, especially indicators related to practicum during a pandemic. Practicum is an important indicator in the learning process, because practicum is one of the activities that apply the scientific method in biology learning (Atnur, 2015). Therefore, the process of practicum activities must be carried out properly and correctly, so that the learning objectives of the psychomotor aspect can be achieved and this can affect student learning outcomes (Khairani, 2020).

In the implementation of biology practicum during a pandemic, teachers conducted concepts and modeling themselves like practical materials containing explanatory action forms in video form so that students could be easily downloaded. Furthermore, students are able to do practical work at home according to the video instructions that have been given.
However, many students still object when the practicum is carried out online. Because the materials and tools needed for some practicum materials are difficult to obtain, the school needs to pay a lot of money to optimize learning related to practicum materials. Thus, the solution given in this practicum activity is that teachers can use tools and materials that are easily available and affordable. Then, another problem is students who still do not understand well the relationship between biology material and the practicum carried out. In this case, the teacher must understand which indicators are difficult for students to understand in the practicum material. This is intended so that teachers can emphasize certain concepts so that misunderstandings do not occur (Yuniarti et al., 2020).

The next problem is regarding the curriculum used in the MAN in Jakarta. urban school, namely the 2013 curriculum which is still not ideal for student’s comfort during a pandemic. This is because the application of the 2013 curriculum during the pandemic only trained cognitive students compared to psychomotor. So load material perceived by students is greater if compared to conventional learning offline (face to face). Even teachers who teach biology by applying the 2013 curriculum during the pandemic also feel uncomfortable. Ruwaida (2019) mentions three important things that are a reference for educational goals, namely cognitive, affective and psychomotor. The success of educators in achieving educational goals is when students are able to follow the learning process.

The basic view of the 2013 curriculum is that students are the main actors who have the ability to actively seek, construct, process, as well as make use of the knowledge they have. Therefore, knowledge is not only transferred from teacher to student (Permendikbud, 2013b). Some teachers basically do not have readiness in implementing the 2013 curriculum, because teachers are required to learn about all aspects of the 2013 curriculum, as a result teachers do not understand concept standards, maximum content standards and graduate standards and assessments (Fitriany, 2015). Students are also required to be able to understand the learning that has been contained in the curriculum within a fairly short period of time.

Therefore, socialization is needed as well as intensive training on the 2013 curriculum for all teachers so they can understand the concept of its application properly (Fitriany, 2015). In this case the teacher has a function as a curriculum developer and designer of a curriculum. In addition to determining the objectives and content of learning, the teacher must also determine the right strategy to be developed (Sanjaya, 2010). Therefore, it is expected that teachers use innovative methods so that competency standards are achieved well, students will also feel comfortable and not feel burdened by the amount of material as well as cognitive and psychomotor balance in students.
Then another problem is that teachers have difficulty identifying learning media that are appropriate to biology material so that students can easily understand the material presented in learning in the pandemic era. The learning media used by MAN in Jakarta are like in general schools, namely "zoom and google meetings". As for administration (such as attendance, learning tools, testing (UH, UTS, UAS) in e-learning. Therefore, there are two accesses to the use of e-learning, namely teacher and student accounts. Even though the delivery of biology learning material has been done using media zoom and google meetings, it cannot be denied that there are still many students who do not fully understand the learning material that has been delivered. Based on interviews with biology teachers at MAN in Jakarta, the learning media used the zoom application with the whiteboard feature, so that the learning atmosphere felt by students was like when they were offline.

Then to overcome student boredom from the amount of material studied, and to increase student understanding of the material being taught, the "quizizz" application is used. Quizizz itself is synonymous with the speed of students in answering questions, so that after playing with Quizizz, students will be more enthusiastic about receiving material again and can improve their learning outcomes (Yan Mei, 2018). This is also in accordance with the opinion of Dewi, CK (2018: 43) that an effective learning media is game-based learning because it can stimulate visual and verbal components in students. Quizizz media can also lead to competition between students, because Quizizz will provide data and statistics regarding the results of student work directly, so that students are challenged to be the best in class (Irma, 2018).

In general, students can easily access Quizizz through an application on their respective smartphones, but in this case it is very inversely proportional to students who are in rural areas. They very rarely or never even use the quizizz application to support teaching and learning activities there. Because there are several villages that have difficult internet access, it does not rule out the possibility that there are villages that have fairly good internet access. This can be said if internet access that reaches rural areas is not completely evenly distributed in all villages. This statement is also supported by the results of research on the use of quizizz media in SMK students in Wonosari which shows that the biggest obstacle experienced by students is a poor internet connection/signal difficulties, followed by limited internet quota (Jumanto, 2021). In addition, besides learning using zoom and quizizz media, you can also apply it as a method of learning with Utilize other media that are more attractive to students, such as video (audiovisual). This is able to increase student’s understanding of learning material (Saputra, 2016), especially in biology subjects where visualization is needed in learning to better understand the concept of material.
In using media video learning, students in urban areas have more ability to be given video as a learning method compared with students in villages (Mahdalena, 2020). When students are given learning videos, students in urban areas are more enthusiastic in paying attention to the contents of the messages contained in the video. So that the resulting output also shows an increase in score on a significant test. Unlike students in villages who are just learning through video media, they focus on visual stimuli such as pictures and animations, rather than paying attention to the content conveyed by the video. In addition, teachers in urban areas are more prepared to learn the video method, because students are now able to follow learning 4.0. Meanwhile in the village, teachers really need skill to explain lesson concepts in a more interesting way through videos (Mahdalena, 2020).

The next problem is that the teacher has difficulty in fostering student learning interest. Referring to the results of interviews with biology teachers at MAN in Jakarta, it was found that digital or virtual learning during the pandemic caused students' interest in learning to ask less than offline. So, it is rather difficult to know whether students understand or not in learning biology. Because the teacher does not fully monitor student activity. Students can study well when accompanied by an interest in learning that comes from themselves rather than having to force students to study without an interest in learning within themselves. Interest in student learning arises when students have a sense of interest in something, because it could be that something is in accordance with what he has needed so far or feels that there is something he can learn so that it becomes meaningful to him. Thus, learning will be difficult to succeed without an interest in good business (Hamalik, 2014).

Therefore, for biology teachers, especially at the secondary level, they must understand in advance what is the goal of students after getting the learning process and cognitive development in themselves. Because through science learning, one of which is biology, students are trained in adaptability, social and communication skills, problem solving and thinking skills. According to Anderman & Sinatra (2012) teachers are able to develop students' knowledge, make learning according to their interests, create skills with what is needed by students, emphasizing learning on deeper initial concepts, and developing learning that is in line with developments and emphasizing student motivation. According to Rustaman, 2005 (in Priyayi, 2018) that to create an active learning environment, teachers should have good communication with students, be able to explain what happens to every living body and reciprocal action with the environment, have the skills to ask questions so that students become active, responding, making assessments and evaluations, and able to organize and manage a class.
CONCLUSION

Research shows student development problems in biology at MAN in Jakarta as one of the urban schools as follows: 1) Implementing the biology program on practical indicators, 2) The revised 2013 curriculum which is considered not ideal for the convenience of students and teachers 3) Dictates the learning media, 4) Interest in students' learning. Some of the solutions that can be offered from problematic already mentioned teachers must know practical materials indicators that students cannot understand, understand the application of the 2013 curriculum so as to provide innovative methods for learning purposes and can optimize the learning media being used, and understand students' cognitive development with good communication capabilities. Students can increase the interest of learning by understanding the essence of the learning materials, by establishing a consistent learning schedule, and Latin mastery. The next suggestion is that advanced research is carried out in other schools, so sample coverage is broader and can determine solutions from developmental biology in schools to achieve specific, comfortable, effective, and efficient biological learning.

REFERENCES


