

Preliminary Analysis of Biology Learning on Class X Students of SMAN 10 Kerinci

Riko Aprianto¹, Moralita Chatri²

¹ Student of Master Degree Program of Biology Education,
Faculty of Mathematics and Sciences,
State University of Padang, Indonesia

² Departement of Biology, Faculty of Mathematics and Sciences
State University of Padang, Indonesia



Abstract - The low level of biology learning outcomes based on observations made and biology learning in the class still apply conventional learning, so innovative learning strategies are needed to improve students' competency knowledge. The purpose of this study was to find out the initial analysis of problems in biology learning in class X at SMAN 10 Kerinci. The study was conducted in April 2019. This type of research is quasi-experimental research. The population in this study was the tenth grade students of SMAN 10 Kerinci who were registered academically in 2018/2019. While the sample of this study was taken by random purposive sampling, then obtained the X class MIPA_A as the control class and class X MIPA_B as the experimental class. The instrument used is a test question. Data analysis was performed using the t test. The findings show that there are significant differences between biology learning competencies of students in the experimental class and the control class. Biology learning competencies of students in the experimental class were higher than in the control class. The average score of students' biological competence in the experimental class is 75.09 and in the control class is 68.90. If seen from the significant level of hypothesis testing of high initial abilities and low initial ability of students, H₀ is rejected and H₁ is accepted with a significant level of <0.05. So, it can be concluded by applying question students have (QSH) active learning in biology learning with the help of picture media can improve learners' competency in the knowledge aspect.

Keywords - Learning Biology; Competence; Initial Capability, Image Media; QSH.

I. INTRODUCTION

In essence education is a process that is relentless and continues (continuing education) (Warsita, 2011: 3). In order for the education process to run well, one of the priorities of the general policy of developing education in Indonesia is to improve the quality of education. In an effort to improve the quality of education, many factors or strategies can be used to implement it. One of the factors that influence the improvement of education quality is the improvement of the quality of the learning process. (Wena, 2009: 229).

Based on Minister of Education and Culture Regulation No. 22 of 2016, the learning process in educational units is

held in a participatory, fun, challenging, motivating student to actively participate, and provides sufficient space for initiatives, creativity and independence in accordance with the talents, interests and physical and psychological development of students.

In learning activities that occur at school, especially in biology learning the teacher is the party most responsible for student learning outcomes. A teacher is not only required to carry out learning activities, but the teacher is also required to have the skills to develop strategies, models and methods of learning that are varied and motivate students, as a science that supports their duties. Therefore, teachers should be able to change the learning process which is initially

passive and monotonous, to become active and enjoyable learning for students.

Based on the results of observations made in class X of SMA 10 Kerinci, it is known that the teachers have not implemented learning well. This is seen from the low student learning outcomes which are still below the minimum completeness criteria (KKM) which have been set at 70. The low value of biology learning, because biology teachers have never provided a variety of models or learning strategies for students. To produce an effective learning process, the teacher must choose the right strategy to apply. According to Lufri, (2007b: 24), the selection of strategies needs to be adjusted to the learning objectives and the characteristics of the material to be discussed. In addition, a teacher must also consider the characteristics of these students.

The learning process still applies conventional learning where the teacher is still dominated by the teacher, so students are less motivated to develop thinking skills. In addition, it is also known that there are still weak initial abilities of students.

According to Yunanda (2018) the initial ability is the basic ability or ability possessed by students before participating in learning. In the learning process activities the teacher is faced with students with varying abilities, starting from the ability of students to high ability to low students. So, if students are faced with a class discussion, only a few students are able to be active in asking questions and expressing their opinions, meaning that students 'curiosity will decrease so that it will affect the students' competency in the knowledge area.

Based on these problems, it is necessary to attempt to improve the quality of biological learning. One effort that can be done by teachers to be able to help students to be able to build participation, and activeness of students and increase understanding of biology learning material is to implement an active learning strategy Question Students Have (QSH). Active learning QSH is interpreted as a question students have in the form of written questions related to material that has not been understood. Active QSH learning is an easy way to learn student wishes and expectations. This method uses a technique to get participation through writing from the conversation (Siliberman, 2009). This is in line with the study of Vianata (2012), which states that by using QSH active learning students become easier and clearer to understand the material presented, because if it is not clear, there is no need to be afraid to ask questions, and supported by discussion

activities so students become more active in the learning process.

The active learning strategy of QSH has several disadvantages, that is, it requires a lot of time if there are too many students and often the questions asked by students are not in accordance with the topic of learning. But this strategy is very good to use for students who lack the courage to express their questions, desires, and hopes through conversation. To cover up the shortcomings of active QSH learning, the researchers used the help of learning media, namely media images. Image media are expected to help the questions of the students so that they are conceptualized and directed in accordance with the material being studied. In addition, image media can help students remember information from the material delivered by the teacher.

According to Sadiman (2009) in Sugiarti, et al (2014: 4), among educational media, images or photos are the most commonly used media that can be understood and enjoyed everywhere. Because of its simplicity, the image as a media that makes it possible to optimize learning is more effective.

Based on the explanation above, this is interesting to do a study entitled "Preliminary Analysis of the Problems of Biological Learning Against Students of X Keals SMAN 10 Kerinci".

II. RESEARCH METHOD

This research is a quasi-experimental study. The population is class X students of SMAN 10 Kerinci who are registered in the 2018/2019 academic year. The sample of this study was taken by random purposive sampling, then obtained the X class MIPA_A as the control class and class X MIPA_B as the experimental class. Data analysis was performed using the t test.

III. FINDING AND DISCUSSION

The data obtained in this study is the competency of students' knowledge of the experimental and control classes.

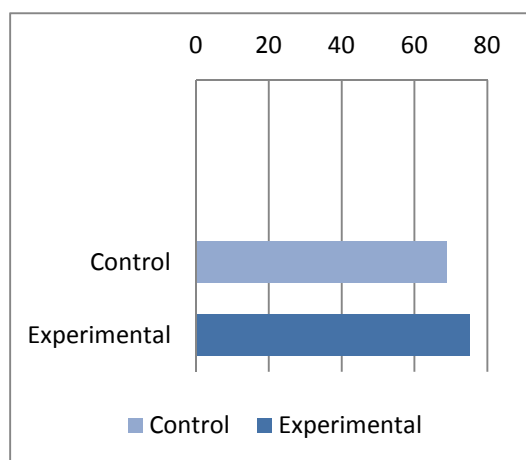
3.1 Data on Student Knowledge Competence

The competency data of student knowledge is presented in Table 1 below.

Table 1. Data on Student Knowledge Competence

Class	Average value
Experiment	75,09
Control	68,90

If presented in graphical form, the competency of students' knowledge in the experimental class and the control class can be seen in the graph below.



Graphic 1. Average Score of Students' Knowledge Competence

The competency of students' knowledge mentioned above was obtained from the results of student competency assessment through the questions of tests conducted at the end of the lesson. Based on Table 1 and Graph 1, it is known that the average value of students in the experimental class is higher than the control class. This means, by applying active learning questions students have in the experimental class, student learning outcomes in aspects of knowledge are higher than applying conventional learning to the control class. This is because QSH active learning is a learning strategy that provides opportunities for students to be active in asking questions in writing, so that students who have fear and anxiety in asking can be realized on material that has not been understood, meaning that students will gain new insights from their own question. QSH learning can also spur students to take the courage to ask questions and give students an active thinking in discussing the answers to the questions asked.

Based on the increase in students' knowledge competencies through QSH learning, this is in line with Vianata (2012), which states QSH active learning is learning that emphasizes students to be active and unite opinions and measure the extent to which students understand lessons through written questions. This QSH learning requires students to write questions about subject matter that are not understood in the form of sheets of paper, then provide an opportunity for other students to read the questions that

already exist. According to Hamruni (2012), the QSH learning strategy is an easy way to learn about student desires and expectations and this method uses a technique of getting participation through writing rather than oral or conversation. This is in agreement with the statement of Zaini (2006), namely active learning of QSH is an easy technique that can be used to find out the needs and expectations of students.

Speaking about written questions through QSH learning, Rusman (2012) explains, to foster student-oriented learning, the teacher can do one of them, namely, asking students to make questions in written form. Asking is a way to encourage students to actively think and be able to encourage learning with their friends, and can develop the abilities of aspects of knowledge, attitudes and skills (Lufri, 2007).

Increasing knowledge competence through active QSH learning can also be seen based on the hypothesis proposed in the students' initial abilities in Table 2 and Table 3 below.

Table 2. Results of Hypothesis Calculation at Student's High Early Ability

Class	Sig.	α	Information
Experiment	0,001	0,05	H_1 is accepted H_0 is rejected
Control			

Table 3. Results of Hypothesis Calculation at Low Initial Students' Capabilities

Class	Sig.	α	Information
Experiment	0,004	0,05	H_1 is accepted H_0 is rejected
Control			

Based on Table 2 and Table 3 it can be concluded, that H_0 is rejected and H_1 is accepted with a significance level obtained from the two hypotheses submitted above which is <0.05 . This means that the knowledge competencies of students with high initial abilities and low initial abilities by applying QSH active learning strategies assisted by image media have a better influence than the knowledge competencies of students with high initial abilities and low initial abilities by applying conventional learning.

Because the QSH learning has a clear explanation on the background of the previous problem, the learning activities in active learning of QSH on the students' initial abilities, assisted by the media, are in the form of images. Image media is one of the tools to deliver material and help attract the attention of students to be more focused and conceptual

in understanding the material. Media images are given to each group that has been distributed heterogeneously. This also makes it easier for students in discussions and cooperation with each group, so that students will become active in finding new examples, other than the related material listed on the media image.

Before the steps of the QSH learning activities are carried out, the teacher distributes the picture media to each group and explains the material in general in front of the class, and explains to the students to know the steps to QSH chase they will do through class discussion.

As for the steps of QSH learning according to Hamruni (2012), QSH learning has seven main steps which have been developed by the researchers when biology learning is taking place, first, the teacher is asked to distribute blank cards to participants in one group. After the question cards are distributed, students are asked to write questions from the material being studied. In order not to spend a long time, the teacher gives direction so students are encouraged to find questions.

In the next step, the students are directed to give paper containing questions to friends beside their left in one group, the cards / papers that have been written questions are then rotated clockwise. Furthermore, students must read and give a check mark on the card containing the agreed questions when the question card is rotated in turn until it returns to the original owner. When the question card returns to the author, each participant means that they have read all of the group's questions, then the teacher asks students to identify which questions are getting the most votes.

When the question card returns to the author, each participant means that they have read all of the group's questions, then the teacher asks students to identify which questions are getting the most votes.

The answers to each student's questions are carried out by developing class discussions and the teacher is assigned as a moderator and facilitator in class discussions. The question card that gets the most content, then the question is read first by the student who has the question. Students from other groups listen and listen to questions from the group that is asked to read the question. After the question has been read, the teacher directs the other groups to discuss the answers to the questions by giving them time to discuss with group friends through teaching materials and media images that have been shared. After students from other groups find answers to questions, the teacher asks students to answer the

questions asked. The answer to the question will be given a back emphasis by the teacher to avoid misconceptions.

After questions from all groups are answered based on the most check marks, then the next step students are called to share questions voluntarily, even if they do not get a vote or check the most on the question card. At the end of the learning activity, the question cards that have not been answered, the teacher asks students to collect their question cards that the teacher might answer at the next meeting. At the end of learning, the teacher guides students to conclude the results of the discussion on the material being studied.

Thus the QSH active learning strategy emphasizes students to be active in asking questions and looking for answers together from the written questions submitted, so that the learning process becomes active and student centered.

According to Karamustafaoglu (2009), the active learning strategy is that students become active participants in the learning process, which is an important means for developing student skills. Active learning process, students switch from being recipients of passive knowledge to being participants in activities that include analysis, synthesis, and evaluation in addition to developing skills, values, and attitudes.

Based on this, it shows that QSH learning can spur students to vent themselves in asking and giving students to think actively in discussing the answers to the questions asked.

In the competency control class the knowledge aspect is lower than the experimental class. This can be seen from the results of the student's final test that was carried out at the end of the lesson. In the control class, there is a class discussion but students find it difficult to interact with friends and teachers when the question and answer time. Only a few students are active in discussion, the rest students are more silent and rely more on the explanation of the material delivered by the teacher, so that the student's learning capital becomes low. In conventional learning, students are given the task to summarize the results of the discussion based on the material being studied, but not all students who can summarize the results of the discussion well.

This results in students being passive and the curiosity of students is very lacking because only a few actively participate in the discussion and question and answer given by the teacher. Students in solving problems in group disukusi, also require a lot of time, because students must

understand the problem in the topic of discussion and note if the problem has been found the answer.

The teacher overcomes the problem by giving students a time limit in orientation to the problem and investigation. There are some groups that are finished in problem solving and some other groups are not finished in solving problems, so in the process of presenting the results of the discussion and evaluating the problem solving process, the teacher is extra to direct students to solve when the discussion takes place. This resulted in not all students being active in the discussion, but only students who were competent to dominate during the discussion.

In other words, it can be concluded that the learning process in both sample classes, namely the experimental class and the control class, have significant differences. The experimental class that applies the QSH active learning strategy assisted by image media has an average value of knowledge competency better than the average value of the realm of control class knowledge by applying conventional learning.

IV. CONCLUSION

Based on the results of the study, it can be concluded that the initial analysis of the problem of biology learning towards class X students of SMAN 10 Kerinci by implementing Question Students Have (QSH) active learning assisted by image media significantly affects students' knowledge competencies, because it can improve knowledge competency in student biology learning.

ACKNOWLEDGMENT

Thanks to Dr. Moralita Chatrri, M.P as advisor, Dr. Azwir Anhar, M.Si, and Dr. Violita, M.Si as kontributor, Azizah Nita, S.PdI as validator and SMA Negeri 10 Kerinci as location of the research.

REFERENCES

- [1] Karamustafaoglu, O. 2009. Active Learning Strategies in Physics Teaching. Online Submission, 1(1), 27-50.
- [2] Kemendikbud. 2013. Permendikbud RI No. 22 Tahun 2016 tentang Standar Penilaian Pendidikan. Jakarta: Kemendikbud.
- [3] Lufri. 2007^a. Strategi Pembelajaran Biologi Teori, Praktek dan Penelitian. Padang: UNP Press.
- [4] _____.2007^b. Metodologi Penelitian. Padang: UNP Press.
- [5] Pentatito, G. 2008. Efektifitas Pendekatan Realistik dalam Menyelesaikan Soal Cerita dan Sikap Terhadap Matematika Ditinjau dari Kemampuan Awal Siswa

- Kelas IV SD di Kecamatan Purworejo. (Tesis). Surakarta: Universitas Sebelas Maret.
- [6] Ruhimat, T., dkk. 2011. Kurikulum dan Pembelajaran. Bandung: PT Rajagrafindo Persada.
- [7] Rahmi, A. 2015. Efektifitas Penerapan Strategi Pembelajaran Aktif Questions student have (QSH) Terhadap Kompetensi Hasil Belajar Pada Materi Sistem Eksresi Ditinjau dari Kemampuan Awal Siswa MAN 1 Padang. (Tesis). Padang: Univeristas Negeri Padang.
- [8] Rusman. 2012. Model-model Pembelajaran: Mengembangkan Profesional Guru. Bandung: PT Rajagrafindo Presada.
- [9] Silberman, M. 2009. Active Learning: 101 Strategies to Teach Any Subject. Translated by Sarjuli, Ammar, Sutrisno, Ahmad, dan Muqowim. Yogyakarta: Pustaka Insan Madani.
- [10] Sugiarti, Y. P. L. N., Putra, A. K. I., & Abadi, S. G. I. 2014. Pengaruh Model Pembelajaran TTW (Think Talk Write) Berbantuan Media Gambar Berseri Terhadap Keterampilan Menulis Bahasa Indonesia Siswa Kelas V SD Gugus 1 Kecamatan Kediri Tahun Ajaran 2013/2014.
- [11] Vianata, H. 2012. Pengaruh Model Pembelajaran Question Student Have Terhadap Hasil Belajar IPS Sejarah Siswa. Indonesian Journal of History Education, 1 (1).
- [12] Warsita, B. 2011. Pendidikan Jarak Jauh: Perancangan, Pengembangan, Implementasi, dan Evaluasi Diklat. Bnadung: PT Remaja Rosdakarya.
- [13] Wena, M. 2009. Strategi Pembelajaran Inovatif Kontemporer: Suatu Tinjauan Konseptual Operasional. Jakarta: Bumi Aksara.
- [14] Yunanda, H. Advinda, L and Sumarmin, R. 2018. Effects of Cooperative Learning model Type Games Teams Tournament (TGT) and Entry Behavior Student To Learning Competence Class XI IPA Senior High School 1 lengayang. International journal of Progressive sciences and technologies. Vol 6.
- [15] Zaini. Hisyam. 2008. Strategi Pembelajaran Aktif. Yogyakarta: Pustaka Insan Madani.