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Implementation of Problem Based Learning (PBL) to Increase Student Activeness in Reproductive System Subject at SMA Negeri 6 Madiun

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ABSTRACT

Education is a learning process connected with mutual interaction between students, teachers and learning resources. The activeness of students is very necessary to create an effective learning atmosphere. The research that has been conducted aims to increase activeness during the learning process by students with Biology subjects on reproductive system subject. The research was conducted by applying the Problem Based Learning (PBL) approach in class XI MIPA 1 SMA Negeri 6 Madiun. Data was collected through an observation sheet format containing a rubric for assessing student activeness. The analytical technique processed in this study uses descriptive analysis in the form of percentages. Based on the results of the study, there was an increase in the indicators of cooperation and social relations with a maximum score of 83.3% of students. The indicator give an opinion with a maximum score of 58.3% of students, teacher interaction with a maximum score of 50% and presenting the result of discussion with a maximum score of 36.1%. Based on research data, it shows that the application of Problem Based Learning (PBL) is effectively carried out in biology subjects. Learners tend to be more active and can collaborate well in group discussions. This research can help teachers provide solutions to overcome the probem of student inactivity in class. The application of learning model with Problem Based Learning (PBL) will be improved ctitical thinking of students.

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INTRODUCTION

Education is a place used to make the learning atmosphere active, because students are involved in learning interactions with teachers to develop and improve their potential (Nugraha, *et al.*, 2020). Education is inseparable from the learning process which

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shows a reciprocal relationship, namely the interaction between students, teachers and learning resources (Fujiawati, 2016). Teaching and learning activities in the classroom must occur two-way communication between teachers and students. This aims to create an active and effective learning atmosphere (Febriani, 2021). Therefore, the activeness of students is needed to create an effective learning atmosphere. There are several things that affect activeness during the learning process, namely: students, teachers, materials, places, time, and facilities (Fakhrurrazi, 2018).

The learning process in schools is still found several problems such as, the teacher has not maximized the varied learning process, causing boredom for students (Djamarah, *et al.*, 2010). Student activeness is one of the successes of learning in the classroom both individually and in groups. Learners who have low activeness can be proven in the initial observation that students tend to be passive when the teacher asks questions and also during group discussions (Wibowo, 2016).

One of the learning methods that is oriented towards students using the problem-based learning (PBL) method (Darmawati, 2021). This method is included in student centered which aims to train problem solving skills. This is one of the advantages of using this method. Problem-based learning is usually associated with problems that occur in everyday life (Ali, 2019).

Problem-based learning is called innovative learning because it is considered new and different from previous learning. Previous learning was more towards conventional teachers who played a major role in the learning process, namely the lecture method (Edison, 2023). The PBL model inspires the continuity of learning because it provides problems to be solved through knowledge and skills that will familiarize students to think critically (Yandhari, *et al.*, 2019).

Learning using the Problem Based Learning (PBL) model in several studies such as those included in Restianim & Gregorius' research (2021) shows that there is an increase of up to 28% in student activeness obtained from observation assessments. This is in line with the increase in student learning outcomes. The use of the PBL model is easy for students to remember because it uses authentic problems in the surrounding environment so that they are able to take tests and produce an increase in their learning outcomes.

The teacher provides a problem, then learners will analyze the problem, write hypotheses or diagnose the problem, formulate alternative / problem-solving strategies and then be evaluated. Therefore, teachers must be skilled in choosing important problems in accordance with learning objectives (Syamsidah & Hamidah, 2018).

Based on the results of observations of students in class XI MIPA 1 at SMA Negeri 6 Madiun. Students in the class have passive characteristics in class, both when the teacher asks questions, during discussions and presentations. The work on assignments or LKPD given by the teacher is also not collected at the specified time. And some students do not do the task well. So to overcome these problems, researchers will conduct Classroom Action Research (PTK) to solve the problem of activeness of students in class XI MIPA 1 SMA Negeri 6 Madiun.

The learning method in this study uses the Problem Based Learning (PBL) learning approach. The material used is the reproductive system because it can be easily integrated contextually integrated with problems in everyday life. This aims to stimulate and improve their understanding of the material. Based on the description above,

the purpose of this study is to increase the activeness of students in Biology subject matter of the reproductive system after applying the Problem Based Learning (PBL) approach in class XI MIPA 1 SMA Negeri 6 Madiun.

The benefits of this research can help teachers provide solutions to overcome the problem of inactivity of students in the classroom. This is done through the application of a learning model with Problem Based Learning (PBL). The use of PBL learning model can train students to think critically and improve problem solving skills.

METHOD

Time and Place of Research

This research was conducted from March to May 2023 in the even semester of the 2022/2023 academic year. The research took place at SMA Negeri 6 Madiun located at Jalan Suhud Nosingi No. 1 Madiun city, East Java province.

Research Subject

The sample was taken from class XI MIPA 1 SMA Negeri 6 Madiun with a total of 36 students.

Research Procedure

This research was conducted by applying Problem Based Learning method on reproductive system material. The research procedure was carried out with planning, implementation, observation and reflection. Planning is done by determining strategies to increase the activeness of students in class XI MIPA 1 SMA Negeri 6 Madiun. The planning begins with preparing a learning schedule, lesson plans, preparing LKPD, making pre-test and post-test questions, making teaching media in the form of PPT and compiling observation sheets to see the activeness of students. Implementation of action is to carry out the learning process in accordance with what is arranged in the learning device. Research data collection was carried out by direct observation to obtain data on the activeness of students during the learning process. Observations were carried out using a rubric for assessing students conducted by observers. Then, the results of observations of students are recorded in the observation sheet. The final activity is reflection, which is a review by students what has been learned that day, what are the benefits and what they feel. For teachers, review the achievement of learning objectives and make improvements to the next learning process.

Instruments and Data Collection Techniques

The data obtained from this study were taken from the results of participant activeness observations. Observation is carried out during learning activities by observing the activities of students starting from initial activities, discussions, presentations and drawing conclusions. The observation sheet of students' activeness is seen from being active in discussions, expressing opinions, asking questions to the teacher and presenting results.

Data Analysis Technique

Data analysis is obtained from data collection developed quantitatively and qualitatively. Quantitative data in the form of learner activeness data from observation sheets using the percentage formula. Then the percentage results are narrated descriptively. The calculation of the percentage of students' activeness can be seen in the following formula (Rosyidah, *et al*., 2022).

$$\text{Percentage of Each Activeness Indicator (\%)} = \frac{\sum \text{Involved Learners}}{\sum \text{Learners}} \text{ x } 100\%$$

RESULTS AND DISCUSSION

Description of Research Results

The learners' response at the beginning is shown by the lack of activeness of the learners in participating in feedback with the teacher, group discussions and expressing opinions. They tend to be passive when the teacher gives a trigger question. So, the researcher made the Problem Based Learning (PBL) method in group discussions which was expected to increase their activeness in class. The results of the observation of students' activeness can be seen in Figure 1. The implementation of learning by using the Problem Based Learning (PBL) approach received a positive response from students. Students in class XI MIPA 1 SMA Negeri 6 Madiun are enthusiastic in conducting discussions in groups.

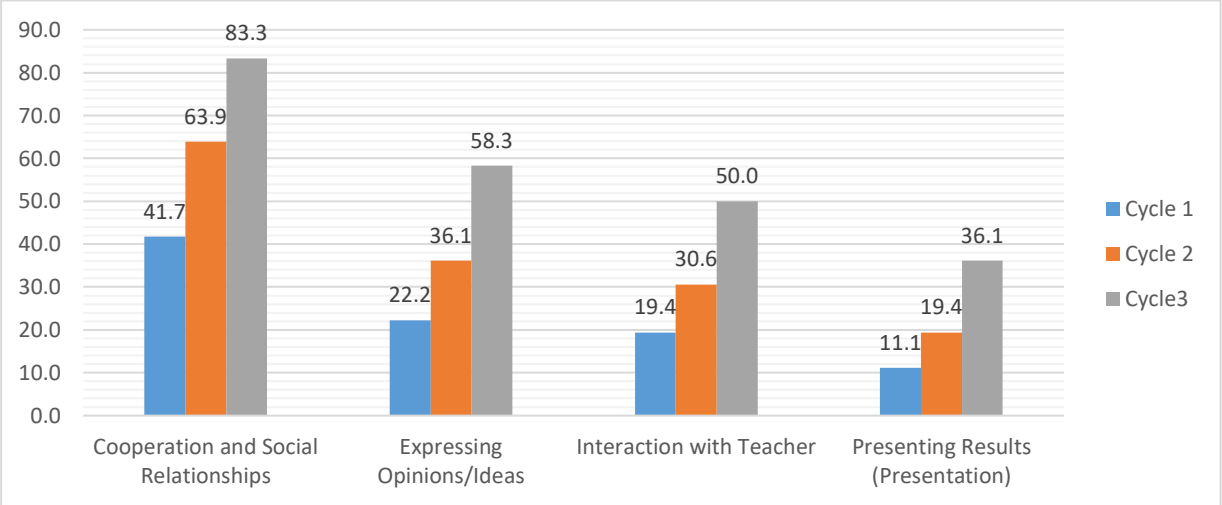

Figure 1. Percentage (%) Assessment of Student Activity in Class XI MIPA 1

Based on Figure 1, it shows that there is one indicator that has a high percentage with a long distance between the percentage range and other indicators. These indicators are cooperation and social relationships. Based on the results of the observation of the character of students in class XI MIPA 1 SMA Negeri 6 Madiun related to cooperation and social relations, there is an increase. The initial cycle saw students in the discussion not working optimally. There are students who do activities that are not related to the discussion and play gadgets. Learning activities at that time occurred during the month of Ramadan so, it also caused students not to work optimally. However, in the last cycle there was an increase and enthusiasm of learners in the discussion. They were actively involved and helped each other and divided the work equally.

Based on research by Istighfarah, *et al.* (2021) the use of learning methods with PBL is effective in increasing student activeness. This is seen from an increase of up to 80% of students being able to answer questions given by the teacher / other students. An increase of up to 73.33% was able to represent their group in presenting the results of group discussions and an increase of up to 93.33% were active in discussing in groups.

The activeness of learners such as actively asking questions, answering and offering opinions during the learning process can stimulate and develop their talents. Learners will practice critical thinking in solving problems. Teachers play an important role in

processing learning systems systematically and interestingly to increase learner activeness. Thus, it can stimulate the activeness of learners (Wibowo, 2016).

Analysis of Indicators Learner Activity

The first indicator, namely cooperation and social relationships, shows the activities of students conducting all group discussion activities by not doing other things that are not related to group activities. The results showed an increase of up to 83.3% (Figure 1). According to Djumali (2013) during the process of learning activities such as discussions there is educational interaction. The interaction runs through knowledge and experience sharing activities.

Learners become a medium for exchanging information and knowledge, so good social interaction between students is very important in the learning process (Novialdi & Telaumbanua, 2021). Good social interaction between students will create a good and harmonious relationship. This good relationship can be applied in cooperation, mutual respect and appreciation (Bialangi, *et al.*, 2018).

Learner activeness can be seen from discussion activities because discussion activities are interpreted as a process that involves two or more participants to exchange opinions or provide ideas/solutions to problems. Learners will be more confident to express the results of their discussions because the answers they are looking for are answers based on many opinions adjusted also with references (Fikri, *et al.*, 2021).

The second indicator, namely expressing opinions or ideas, shows that learners are active in providing ideas or answers related to problems discussed in group discussions. Learners who contribute their opinions or ideas will certainly channel their ideas by writing answers on the learner worksheet. Thus, they will be actively involved in group activities. Based on the results of the study, it was found that there was an increase in learners who wanted to express their opinions up to 58.3% (Figure 1) of the total number of learners in the class.

According to research by Triyanto, *et al.* (2016) the activeness of students is seen from expressing opinions, being active in participating in discussion activities, reading and making lesson notes, responding to questions or opinions, demonstrating utilization through discussion. The research was conducted with the PBL method and showed a good response with a percentage of 78.77%.

Opinions are the basis for thinking about expressing ideas. Expressing an opinion means explaining ideas or expressing thoughts to others (Ginanjar, *et al.*, 2019). Expressing ideas or opinions can train students to think critically, be brave or more confident in themselves. Thus, confidently expressing opinions will be used to improve skills and can be useful in later life (Safitri & Mufida, 2022).

Expressing opinions is also explained in Law No. 9 of 1998 Article 1 Paragraph 1 which states "Freedom of expression is the right of every citizen to convey thoughts orally, in writing freely and responsibly in accordance with the provisions of applicable laws and regulations" (Susanto, 2019). Therefore, learning using the discussion method is very good to be given in the learning process to increase students' confidence in their opinion. Teaching shy learners to practice expressing their opinions, increasing creativity and a good attitude in making decisions (Isabela & Yesi, 2021).

The third indicator is interaction with the teacher, which is shown by asking questions to the teacher, expressing opinions and answering teacher questions. Based on the results of the study, it was found that there was

an increase of up to 50% (Figure 1) of learners in the class. In the initial cycle, learners showed a passive character and did not answer when the teacher asked triggering questions. There was an increase in the last cycle of learners showing good interaction with the teacher. This was obtained from observation, many learners were willing to express opinions, ask questions and present the results of their discussions.

Good relationships built by teachers and students can provide a sense of security and comfort, so that students can carry out learning activities interactively (Yulianto, 2016). Teachers must prepare interesting teaching materials to increase the attention and activeness of students (Prastowo, 2014). This is because learning media is one of the success factors of learning because it helps teachers in delivering material (Rosanti & Theresia, 2022). Creativity in making teaching media is needed by teachers to attract students' learning activeness. For example, the selection of problems in LKPD, reinforcement of material using interesting PPT or learning videos (Alfrida, 2019).

Appropriate interaction in the learning process can increase or arouse students' learning motivation. This interaction is needed in two directions, namely there is reciprocity between teachers and students. Communication comes from the teacher shown to the learners and vice versa from the learners shown to the teacher (Yahzanun, *et al.*, 2022). Interaction with the teacher and also with group members shows feedback. Feedback shows how well learners understand the material being taught. For example, by learners responding to the teacher when the teacher asks or giving their opinions after learning the material (Sun, *et al.*, 2015).

The fourth indicator is presenting the results of the discussion which is shown by students presenting the results of group discussions in front of the class. Presentation of results is seen from the whole group presenting or only representatives of each group. Based on the research, the results obtained increased from the initial cycle only 4 people (11.1%) who wanted to present the LKPD, then in the second cycle increased to 7 people (19.4%) and in the last cycle increased to 13 people (36.1%) who presented.

Changes in activeness in the learning process in students can be influenced by several factors such as the context of the material that is considered difficult for them so that they are reluctant to convey the results of their discussions. In cycle 1 the material taught was the reproductive system of gametogenesis sub material, cycle 2 related to ovulation and menstruation sub material and cycle 3 was fertilization, pregnancy and exclusive breastfeeding. Problems in LKPD cycle 1 and 2 do prioritize theory and few cases are given because the material is abstract and requires theoretical explanation. Cycle 3 cases are given more and take from daily life and are associated with local culture. Thus, students better understand the context of the material provided.

CONCLUSION

Based on the results of the study, it can be proven that the use of the Problem Based Learning approach can increase the activeness of students during the learning process. Based on the results of the study, it was found that there was an increase in the indicators of cooperation and social relations with a maximum score of 83.3%. An increase in expressing ideas with a maximum score of 58.3%, teacher interaction with a maximum score of 50% and presenting results with a maximum score of 36.1%. Based on this, it can be concluded that the application of Problem Based Learning (PBL) is effective in

biology subjects with reproductive system material. Students tend to be more active and can collaborate well in group discussions. The problems taken must be related to the surrounding environment or daily life and the culture of Indonesian society. This aims to make students easy to understand the learning material.

REFERENCES

Alfrida. 2019. Peningkatan Aktivitas dan Hasil Belajar IPA Melalui Penggunaan Media Pembelajaran Interaktif pada Peserta Didik Kelas VIII B SMP Negeri 1 Rantepao. *Jurnal Pemikiran dan Pengembangan Pembelajaran,* 1(2) 54-64.

Ali, S. S. (2019). Problem Based Learning: A Student-Centered Approach. *English Language Teaching*, *12*(5), 73-78. https://doi.org/10.5539/elt.v12n5p73.

Bialangi, Mursito S., & I Nengah K. 2018. Pengembangan Sikap Sosial dalam Pembelajaran Biologi: Kajian Potensi Pembelajaran Kooperatif. *Proceeding Biology Education Conference,* 15(1) 138-145.

Darmawati, I. M. 2021. *Problem Based Learning* (PBL): Model Pembelajaran untuk Mengembangkan Cara Berpikir Kritis Peserta Didik. *Jurnal Kajian Pendidikan FKIP Universitas Dwijendra,* 12(1) 61-69.

Djamarah, Syaiful B & Aswan Z. 2010. Strategi Belajar Mengajar. Rineka Cipta: Jakarta.

Djumali. 2013. Landasan Pendidikan. UMS Press: Jakarta

Edison, A. (2023). *Model Problem Based Learning Solusi Meningkatkan Prestasi Belajar.* Lombok, NTB: Pusat Pengembangan Pendidikan dan Penelitian Indonesia.

Fakhrurrazi, F. (2018). Hakikat Pembelajaran yang Efektif. *At-Tafkir*, 11(1), 85-99. https://doi.org/10.32505/at.v11i1.529

Febriani, A. P. (2021). Pengaruh Lingkungan Belajar terhadap Proses Pembelajaran Kelas XI di SMK Negeri 1 Cianjur. *JPPHK (Jurnal Pendidikan Poitik, Hukum dan Kewarganegaraan*, 1-9.

Fikri, A., Alfiani, F., Faujiyanto, A., & Pertiwi, E. P. (2021). Kolaborasi Metode Diskusi dan Tanya Jawab untuk Meningkatkan Keaktifan Peserta Didik pada Pembelajaran Sejarah di MA Bahrul Ulum Kecamatan Dayun. Riau Education Journal, 1(1), 9–14. https://doi.org/10.57171/jt.v3i2.335

Fujiawati, Fuja S. 2016. Pemahaman Konsep Kurikulum dan Pembelajaran dengan Peta Konsep bagi Mahasiswa Pendidikan Seni. *Jurnal Pendidikan dan Kajian Seni,* 1(1) 16-28. http://dx.doi.org/10.30870/jpks.v1i1.849

Ginanjar, Egii G., Bambang D., Sriyono. 2019. Faktor – Faktor yang Mempengaruhi Rendahnya Partisipasi Belajar Peserta Didik SMK. *Journal of Mechanical Engineering Education,* 6(2), 206 – 219.

Isabela, Miftahus S., & Yesi P. 2021. Penerapan Model PBL (*Problem Based Learning*) untuk Meningkatkan Kemampuan Percaya Diri Siswa. *Journal Pendidikan Tambusai,* 5(2), 2729-2739.

Istighfarah, Roufi I., Novi F., Sumarsih. 2021. Penerapan Model Problem Based Learning (PBL) pada Pelajaran Biologi untuk Meningkatkan Keaktifan dan Kemampuan Berpikir Kritis Peserta Didik Kelas X MIPA 5 SMA Negeri 2 Sumenep Tahin Pelajaran 2021/2022. *Prosiding Seminar Nasional Pendidikan Profesi Guru FKIP Universitas Ahmad Dahlan,* 1(1), 1692-1696.

Prastowo, A. 2014. Pengembangan Bahan Ajar Tematik Tinjauan Teoritis dan Praktis. Jakarta: Kencana.

Restianim, V. & Gregorius We'u. 2021. Upaya Peningkatan Hasil Belajar Melalui Model Pembelajaran *Problem Based Learning* untuk Materi Penyajian Data pada Siswa Kelas VII SMP Satap Ngaluroga. *Jurnal Pendidikan Ekonomi,* 6(2) 191-200.

Rosanti, M.A., & Theresia S.R. 2022. Pengembangan Media Pembelajaran Tematik Berbasis Multimedia Interaktif *Powerpoint* untuk Meningkatkan Keaktifan Belajar pada Peserta Didik Kelas V di SD Negeri Sudirman Ambarawa. *Jurnal Pendidikan dan Konseling* 4(6) 4849-2858. https://doi.org/10.31004/jpdk.v4i6.9035.

Rosyidah, N. F., Fauziyah, N., & Khikmiyah, F. (2022). Pengembangan Lembar Kerja Peserta Didik Model Problem Based Learning Menggunakan Web Liveworksheet untuk Kelas VII SMP. *Prosiding Seminar Nasional MIPA UNIBA 2022.* Hal 138-145.

Safitri, N.S., & Mufida I. 2022. Efektivitas Konseling Kelompok dengan Teknik *Positive Reinforcment* untuk Meningkatkan Kemampuan Mengemukakan Pendapat Siswa di SMA N 2 Murung Kabupaten

Murung Raya. *Proceeding International on Islamic Educational Guidance and Counseling,* 215-227. https://doi.org/10.18326/iciegc.v2i1.374

Suginem. (2021). Penerapan Model Problem Based Learning (PBL) Untuk Meningkatkan Aktivitas dan Hasil Belajar Siswa. *Tahun Jurnal Metaedukasi: Jurnal Ilmiah Pendidikan*, *3*(1), 32-36. https://doi.org/10.37058/metaedukasi.v3i1.3254.

Sun, D. L., Harris, N., Walther, G., & Baiocchi, M. (2015). Peer assessment enhances student learning: The results of a matched randomized crossover experiment in a college statistics class. *PLoS ONE*, *10*(12), 1-7. https://doi.org/10.1371/journal.pone.0143177

Susanto, M. I. (2019). Kedudukan Hukum People Power dan Relevansinya dengan Hak Kebebasan Berpendapat di Indonesia. *Volksgeist*, 2(2), 225-237.

Syamsidah & Hamidah S. 2018. Buku Model Problem Based Learning (PBL). CV Budi Utama Deepublish : Yogyakarta.

Triyanto, S. A., Wahidin., Hartania, N., Solihat, A., & Sutrisno. (2022). Blended-Problem Based Learning with Integrated Social Media-Based Learning Media in Improving Studen'ts Critical Thinking Skills. *Biosfer: Jurnal Pendidikan Biologi, 15*(2). 242-254.

Yahzanun, A.U. W., Adi, K. R., & Wiradimadja, A. (2022). Pola Interaksi Guru Dan Peserta Didik Dalam Pembelajaran Jarak Jauh. *EDUEKSOS: The Journal of Social and Economics Education*, *11*(1), 45-54. https://doi.org/10.24235/edueksos.v11i1

Yulianto, A. 2016. Pendidikan Ramah Anak: Studi Kasus SDIT Nur Hidayah Surakarta. *Jurnal Kajian Kependidikan Islam,* 1(2), 1377-155. https://doi.org/10.22515/attarbawi.v1i2.192

Wibowo, Nugroho. 2016. Upaya Peningkatan Keaktifan Siswa Melalui Pembelajaran Berdasarkan Gaya Belajar di SMK Negeri 1 Saptosari. *Jounal Electronics, Informatics, and Vacational Education (ELINVO).* 1(2): 128-139.

Yandhari, I. A. V., Alamsyah, T. P., & Halimatusadiah, D. (2019). Penerapan Strategi Pembelajaran Problem Based Learning Untuk Meningkatkan Kemampuan Pemecahahan Masalah Matematis Siswa Kelas IV. *Kreano, Jurnal Matematika Kreatif-Inovatif*, *10*(2), 146–152. https://doi.org/10.15294/kreano.v10i2.19671