Unnes.J.Biol.Educ. 9 (3) (2020)

Journal of Biology Education

http://journal.unnes.ac.id/sju/index.php/ujbe

The Effectiveness Of The Problem Based Learning Model Assisted By Scientific Articles To Improve Student Learning Outcomes In Excretory System Material

Riska Nuril Aeni[1]✉, Retno Sri Iswari[1]

[1]Biology Department, FMIPA, Universitas Negeri Semarang, Indonesia

Article

Article History:

Received: August 2020
Accepted: November 2020
Published: December 2020

Keyword:
Learning utcomes, Problem based learning, Scientifict rticles

Abstract

The 2013 curriculum is related to four models that are recommended to be implemented, one of them is the Problem Based Learning (PBL) model. The innovation of the PBL model is shown by the existence of scientific articles as students' media in solving problems. Excretory system material is a material related to students' daily activities regarding the process of excreting substances from the body and student's environment. The purpose of this study is to analyze the effectiveness of the PBL model assisted by scientific articles. This study is a Quasi-Experimental Research with Non-equivalent Control Group Design and the sampling technique used was simple random sampling. The research subjects were XI MIPA 1 (Control Class) and XI MIPA 2 (Experiment Class). The data obtained were in the form of cognitive scores (pre test and post test), skill scores, attitude scores, student responses, and teacher responses. The average score of the post test score for the experimental class was 68.75, and the posttest score for the control class was 62.50. Student psychomotor learning outcomes are categorized into good and very good criteria. Likewise, affective learning outcomes show all students have an attitude of discipline, honesty, responsibility, and cooperation. The results showed (1) there were differences in learning outcomes between classes using the PBL model assisted by scientific articles and the class using discovery model and student scores in the experimental class were higher, (2) the increase in learning outcomes of medium and high criteria class using the PBL PBL model assisted by scientific articles is better than the class using discovery model. Thus, the PBL model assisted by scientific articles is effective in improving student learning outcomes in the excretory system material.

✉ Correspondence Address:
D6 Building 1st Floor Jl. Raya Sekaran, Gunungpati, Semarang
E-mail: riskanurilaeni@gmail.com

p-ISSN 2252-6579
e-ISSN 2540-833X

INTRODUCTION

The 2013 curriculum which is currently implemented in primary to secondary education level has more strength that can cover the weaknesses of the Education Unit Level Curriculum (KTSP). The advantages of the 2013 curriculum are the availability of the syllabus and the Learning Implementation Plan (RPP) and the making of learning devices is easier (Uran, 2018). The learning is student-centered and the teacher only as a facilitator or mediator between the material and students. The 2013 curriculum relates to the learning models. Learning models that are required to be implemented are Discovery learning (DL), Inquiry Learning (IL), Project Base Learning (PjBL), and Problem Based Learning (PBL) (Permendikbud Number 65 of 2013 concerning process standards). Before choosing a learning model, we must pay attention to several things, first, the characteristics of the material being taught. Second, the goals that are to be achieved during the learning process. Third, the level of ability of students in understanding the material by using the implemented learning model. Fourth, the syntax of a different learning model for each learning model, this difference can be seen from the opening and closing of the syntax (Trianto, 2013).

Determination of the model is adjusted to the basic competence of the material. The excretory system material lies in the basic competency 3.9 and 4.9. Basic competence 3.9 To analyze the relationship between the tissue structure of the organs in the excretory system in relation to bioprocesses and functional disorders that can occur in the human excretory system. Basic competence 4.9 Presenting the results of the analysis of the influence of life patterns on abnormalities in the structure and function of organs that cause disruption in the excretory system and its relation to technology. Students after studying this material are expected to be able to connect the structure to the function of each organ and learn a healthy lifestyle in order to avoid disorders of the excretory system.Based on the results of observations with the biology teacher at SMA N 1 Ngawen, the models contained in the lesson plans were DL and IL, while PjBL and PBL were not listed. In addition, the learning outcomes are assessed is cognitive learning outcomes only, while psychomotor and affective are not assessed. Learning outcomes are abilities obtained by students after the learning process takes place which can provide changes in behavior, both knowledge, understanding, attitudes, and skills of students so that they become better than before (Sjukur, 2012). Although cognitive learning outcomes is prioritized, in reality the results are still low.

The obstacles of cognitive, psychomotor, and affective learning outcomes as well as based on the basic competence of the excretion system can be solved by the implementation of the PBL model. According to Fitri (2016), the PBL model can train students to find concepts. In line with Fitri, Kono et al. (2016) argued that the PBL model can have a significant effect on increasing students' conceptual understanding of biology by obtaining significant scores for the results of the concept understanding test. When students can understand the concept, students will be able to understand the material well so that the learning outcomes increase. In addition, the PBL model can also train students to develop Problem Solving skills with real problems from students' daily life to make students have critical and high-level thinking skills (Shoimin, 2016).

The choice of PBL model in a research because it has three characteristics, namely learning centered on problem solving, students have the responsibility to solve problems, and teachers are only facilitators who support in order to solve problems (Kauchak & Paul, 2012). In line with Nurdyansyah and Fahyani (2016), other characteristics owned by the PBL model include problem topics that having real, clear, and easy to understand criteria, focusing on interdisciplinary linkages, authentic investigations, producing products in the form of problem solving, and collaboration.

The PBL model innovation carried out by researchers was implementing the PBL model assisted by scientific articles. The use of the PBL model assisted by scientific articles aims that students can find concepts logically with a stimulus in the form of research questions obtained from scientific articles. Scientific articles as students' media in finding concepts. The concepts found by students through discussion in scientific articles are expected to be able to improve student learning outcomes both from the aspects of knowledge, skills, and

attitudes. The implementation of the PBL model in excretory material because the excretory material is a material that is competent. Students can think critically and can find the concept of the relationship between the structure of the excretory system and its function. In addition, students are expected to be able to analyze and understand a healthy lifestyle in order to avoid disorders of the excretory system.

The effectiveness of the PBL model assisted by scientific articles can be seen from two specific indicators, namely the difference in learning outcomes and an increase in learning outcomes by using the PBL model assisted by scientific articles. Therefore, the research questions that will be studied in the research are (1) How is the students learning outcomes in the excretory system material by using the PBL model assisted by scientific articles? (2) How is the improvement of student learning outcomes on excretory system material by using the PBL model assisted by scientific articles? The research objectives were carried out, namely to (1) Analyze student learning outcomes by using the PBL model assisted by scientific articles. (2) Analyze the improvement of student learning outcomes by using the PBL model assisted by scientific articles.

METHOD

The research was conducted from March to April 2020. This study is an experimental research with a Quasi experimental design type. The Quasi Experimental Design is a development of true Experimental Design which has a control group but it does not fully function to control the experimental group from outside variables that influence it (Sugiyono, 2013). The research design carried out was as follows.

O_1	X	O_2
O_3		O_4

Figure 1. *Nonequivalent Control Design.*

Information:
O_1 : The pre-test measurement of the experimental group,
O_2: The post test measurement of the experimental group,
X: Providing treatment,
O_3: The pre test measurement of control group,
O_4: The post test measurement of control group (Sugiyono, 2017).

The sampling technique was simple random sampling, namely taking samples from the population which was done randomly without paying attention to the strata in the population The population of the fifth sample class is homogeneous, with significant results of 0.38> 0.05. Sampling from a homogeneous population was taken randomly and obtained class XI MIPA 1 and XI MIPA 2 as samples then tested for normality and homogeneity. The results of the normality test for the two classes were normally distributed with 0.022 and 0.005 results, respectively. While the homogeneity of the two classes is homogeneous with a score of 0.393 and the results of the average equation test, 0.00 <0.05, it indicates that both classes have the same initial ability. The correlation between the two classes has a significant score of 0.165 > 0.05, which means that the two classes have a close and mutually correlated relationClasses that are normally distributed and homogeneous are given a lottery to determine which is the experimental class and which is the control class. The results of the lottery were obtained by class XI MIPA 2 as the experimental class and class XI MIPA 1 as the control class.

The variables used are independent, dependent, and control variables. The independent variable includes learning by using the PBL model with the help of scientific articles and discovery models. Then, the dependent variable in the form of learning outcomes in cognitive, affective, and psychomotic aspects of the excretory system material. While the control variables are the excretory system material, teachers, supporting facilities, and infrastructure. In addition, there are three stages in the research. *First*, the preparation stage is in the form of problem identification, observation, and making a research proposal.

Second, the implementation stage and the data collection which contain the implementation of learning with the PBL model assisted by scientific articles, the data collection on learning outcomes based on three aspects. *Third*, the data collection stage which contains the results of the data obtained during learning. The data obtained were pre-test, post-test, task scores, skill scores, attitude scores, student responses and teacher responses.

Research data in the form of a post test that was tested for normality and homogeneity. After that, to find out the differences, it was tested by using independent sample t test. The pretest and posttest data were tested by N-gain to determine the increase in learning outcomes. The results of the student response questionnaire as a support for the implementation of learning were accompanied by the results of the teacher's response.

RESULTS AND DISCUSSION

The research results obtained are in the form of cognitive, psychomotor, and affective learning outcomes. The cognitive results of the research were obtained through the pretest and posttest of the experimental class and the control class. The pretest result was used to determine the class sample, while the post test was used to determine the learning outcomes in the test of differences in learning outcomes of the two classes. The discussion discussed is related to the research results obtained about the differences in learning outcomes of the two classes and the increase in learning outcomes of the experimental class compared to the control class

The Differences in Learning Outcomes by Using the PBL Model Assisted by Article

Student learning outcomes that were compared between the experimental class and the control class include cognitive, psychomotor, and affective learning outcomes. The first learning outcome that was calculated is cognitive. Cognitive learning outcomes are related to the post test. The post test obtained is tested for normality, homogeneity, and the average difference test. Cognitive learning outcomes can be seen in Table 1

Table 1. Student cognitive learning outcomes

No.	Category	Eksperimental Class		Control Class	
		Pre Test	*Post Test*	*Pre Test*	*Post Test*
1.	Highest score	80	100	90	100
2	Lowest score	5	25	5	15
3.	Average	32,64	68,75	28,33	62,50

The average results of the post-test of the two classes showed that the post-test results of the experimental class were higher than the control class. The results of the post test could not be used as a benchmark that the two classes had differences in mean. Furthermore, the results of the post test were tested for normality, homogeneity, and independent samples t test. The results of the independent samples t test which serve as a guide that the two classes have significantly different learning outcomes. The complete results can be seen in Table 2.

Table 2. The Results of Normality Test, Homoegenity Test and Independent Samples T Test

No.	Post test	Significant Score			
		Kolmogrov-Smirnov	Shapiro-Wilk	Homogenity Test	Independent samples t test
1.	Eksperiment Class	0,200	0,148	0,193	0,254
2.	Control Class	0,024	0,12		

The significant score of the post test obtained shows a normal distribution from both the Kolmogrov-Smirnov and Shapiro-Wilk tests. The normal distribution is indicated by the results of learning data> 0.05. The reason for using the Kolmogororf-Smirnov test is because the test is used to test the normality of one sample, namely the learning outcomes of the excretion system (Herawati, 2016). While the Shapiro-Wilk test is used to test for normality with a sample of less than 50 samples. The Shapiro-Wilk test has requirements including interval or ratio scale data, single data or not yet grouped in the frequency table and data from random samples (Cahyono, 2015). The post test of both classes was tested for homogeneity which showed that the two classes were homogeneous. The score that normally distributed and homogeneity are tested by Independent samples t test with a significance score of 0.254> 0.05. The significant score 0.254> 0.05, then the hypothesis was accepted, which means that there was a difference between the post test score of the experimental class and the post test score of the control class, it indicated by a significant score of more than 0.05 at the 95% confidence level.

The cognitive learning outcomes of the experimental class based on Table 1 and Table 2 are better and the score is higher than the control class. It is because students understood the material easier and could find concepts. Investigations conducted by students through the intermediary of scientific articles. Students easily understood through scientific articles because during the process of problem solving and finding solutions, students played an active role. Scientific articles also played a role in providing the information needed by students to answer problems and become provisions for students to solve problems. Students participated in understanding the material being studied by discovering concepts. When students found a concept, students would remember and understand the material longer. Students who are able to understand and remember material more quickly are associated with long-term memory. Long-term memory has a function in the ability to remember the past and use this information to be used when needed (Bhinnety, 2008). Students who memorized the material longer would do the test with good results, because when students memorized their memorization only lasts a moment. In different when students were able to analyze, not only understand and memorize, but students were able to relate materials to one another.

This opinion is supported by the results of a questionnaire as many as 71.1% and 76.3% of students who could understand the concept by using the PBL model assisted by scientific articles. This is in line with the opinion of Hidayah & Pujiastuti (2016) who stated that the PBL model has special characteristics, namely that students who are contextually trained to think critically and have the ability to solve problems and they are able to find concepts. Students' critical thinking skills are obtained by students through problem orientation and investigations carried out in groups so that it helps and bridges students to think critically about the opinions and information obtained (Novitasari et al., 2015). Concept discovery can be done by students when studying in groups, students can discuss with a group of friends to find concepts (Handika & Wangid, 2013). Juanda (2016) also argued that students find concepts through activities they do, so students will be trained physically and mentally. Students who are physically and mentally trained through the process of investigation and finding solutions to problem solving will make their learning outcomes better than students who only know the material without the process of searching and solving problems. The students' interest in using the PBL model makes students understood the material easily.

The cognitive learning outcomes of the experimental class that are different and higher than the control class also have an impact on the psychomotor and affective learning outcomes. Psychomotor learning outcomes can be seen in Table 3.

Table 3. Psychomotor and Affective Learning Outcomes of Research Class

No.	Category	Score	Psikomotorik		Afektif	
			Eksperimental Class	Control Class	Eksperimental Class	Control Class
1.	81 – 100	A	32	0	33	5
2.	61 – 80	B	4	0	3	27
3.	41 – 60	C	0	14	0	4
4.	21 – 40	D	0	22	0	0
5.	0 – 20	E	0	0	0	0

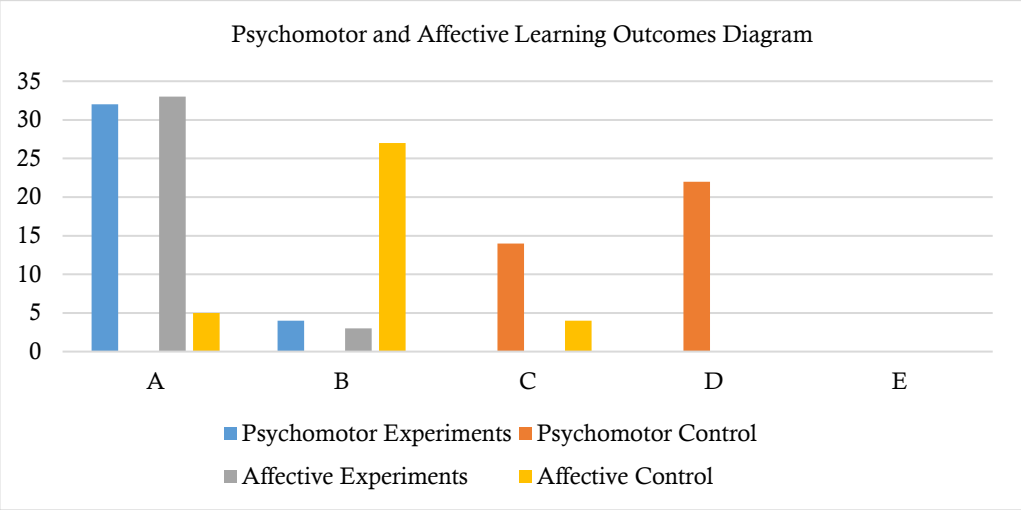

Figure 2. Psychomotor and Affective Learning Outcomes Diagram

The results of the assessment based on observations show that students who have good skill scores are 4 students, while the excellent skill scores are 32 students with good criteria starting from 61-80 while the very good scores start from 81-100. These results indicated that the experimental class psychomotor was better than the control class. Then, the experimental class can achieve indicators on psychomotor assessments of the ability to answer, convey material, provide solutions, and master the material. Unlike the control class, none of the students achieved all the indicators.

The psychomotor learning outcomes of the experimental class was better than the control class, it was seen during the teaching and learning process. During the learning process, the experimental class conducted small group and large group discussions. Small group discussion was carried out when searching for solutions with group members. When students carried out discussions with groups of students were trained to express opinions and speak well. In addition, when group discussions students learnt to find solutions and came up with answers to problems that were in accordance with the problems. Then in class discussions, students learnt how to make the class conducive, students also learnt to ask questions, answer, provide solutions properly without offending others. Students who carried out discussions made students more critical and played an active role in class. Students also had the right to argue and issue their assumptions if there were differences but still in a polite manner. During the learning process, students took an active role from students who initially had less opinion were required to express their opinions when presenting.

The active students in learning and are able to express opinions and are able to train their motor skills made students' psychomotor learning outcomes increase if it id compared to the control class which only questions and answers with the teacher and the teacher is still active in providing answers and questions

to the control class. Asfadi, et. al (2015) argued that there were good student learning outcomes because it could not be separated from the advantages of the PBL model which made students think critically and experienced learning directly so that students became active based on the activities carried out by students. In addition, students carried out a problem-solving process. When solving problems students were required to be able to find the right solution.

Problem solving activities would train students in high thinking processes and thought processes would be implemented in the surroundings (Bahri, 2018). Based on this statement, the experimental class was better to the control class as seen from the psychomotor learning outcomes through the results of observations made. The results of teacher responses in the form of PBL models in the excretory system could explore student opinions and students could relate them to daily events. Then, students were interested and enthusiastic and active when discussing lessons with various answers

The affective learning results of the students studied were only seen by the senses. There were four students' attitudes researched and observed and all of them were studied during the learning process. Affective learning outcomes can be seen in Table 3.

Affective learning outcomes in table 3 show were 91.67% of 36 students who had a very good attitude and 8.37% of 36 students who had a good attitude. The results of the attitude assessment of the experimental class was better than the control class, it is seen from the number of students who got very good score in the experimental class more than the control class. In addition, from the 36 students in the control class, there were 4 students who got sufficient scores, while the criteria that the students expected was good and very good score. The entire experimental class students fulfilled the four attitudes observed, namely discipline, responsibility, honesty, and cooperation. The attitude of students in the experimental class was better than the control class because through the process of discussion and presentation students could apply the four attitudes studied. Investigative or investigative activities carried out by students not only help students solve problems but can develop student collaboration so that students can find their social attitudes (Novitasari et al., 2015).

Students learnt to be responsible for the assignments assigned to each group member. Students also learnt to respect the opinions of others and learnt to complete assignments in accordance with applicable regulations. As stated, that the PBL model can make students carry out the responsibilities given, admit mistakes made, and correct the mistake so that it does not happen again in the future. What students do can practice honest attitudes (Putera, 2012). Then, students' curiosity is also enhanced by the identification of problems given by the PBL model (Noviar & Hastuti, 2015). The result of observations showed that almost all students required the indicators of the four attitudes. The achievement of all indicators showed that the PBL model also influenced the psychomotor and affective aspects, it was not only cognitive.

The Improvement of Student Learning Outcomes with PBL Model Assisted by Scientific Articles

The improvement in student learning outcomes is seen from an increase in the post-test and pre-test scores. The pre test and post test were processed with the N-gain formula so that the results were obtained in three criteria, namely low, medium, and high. However, the N-gain results were focused on medium and high criteria, the results can be seen in Table 4.

Table 4. The results of the N-gain of the Experiment Class and Control Class

No.	Criteria	Total Number of Students	
		Experimental Class	Control Class
1.	Low	5%	39%
2.	Medium	67%	22%
3.	High	27%	39%

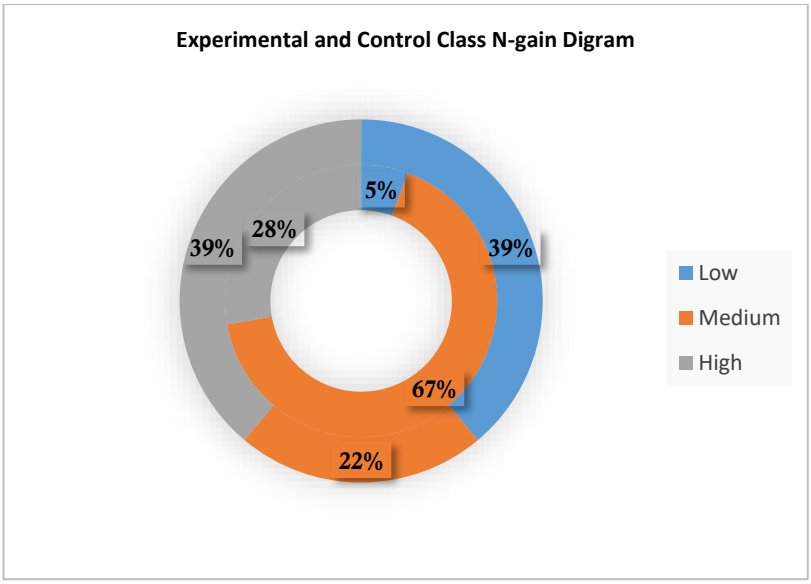

Figure 3. Experimental and Control Class N-gain Digram

Based on the table, the expected criteria were medium and high. The experimental class had more students in the medium to high criteria (34) than the control class (22). It shows that the experimental class had a higher learning outcome than the experimental class. It is supported by the number of students who were categorized in the low criteria in the control class more (14) than the experimental class. The improvement in learning outcomes in the experimental class was caused by students better understanding the material with the PBL model. Students understood the material which means that they could solve problems well and provided appropriate solutions. Good understanding was also seen from the ability to find concepts. The discovery of the concept made students train memory in Long Time Memory so that students could apply and analyzed the material obtained. Students discovered concepts through activities carried out by students. It is supported by a student response questionnaire which stated that 54.1% of students understood the excretory system material with the PBL model assisted by scientific articles. According to Fitri (2016), the PBL model made students understood the material, understanding biology material was obtained by students from student learning activities

The improvement in learning outcomes was also due to students who were being interested in the PBL model. The interest was seen from the questionnaire results with 55.3% of students who were interested in learning with the PBL model. Then, Harnitasari et al., (2015) suggested that the improvement in student learning outcomes was also due to student involvement in learning starting from problem identification, investigation, problem solving to providing solutions, all of them involved students, teachers only as facilitators. The improvement in student learning outcomes was also influenced by the intermediary media used during the learning process. PBL learning assisted by scientific articles made students taught to find solutions to the problems presented and students learnt more about the process of finding concepts.

Based on the results of the study, the PBL learning model assisted by scientific articles was effective for increasing student learning outcomes on the excretory system material. It is seen from the differences in learning outcomes of the experimental class and the control class with the better results of the experimental class. Then, the improvement in learning outcomes can be seen from the comparison of the number of students who are categorized into the medium to high criteria on the N-gain test, the result is that the experimental class is higher than the control class. The effectiveness in the PBL model was successfully implemented in excretory learning.

CONCLUSION

Based on the results and discussion of the effectiveness of the PBL model assisted by scientific articles to improve student learning outcomes in the excretory system material, it can be concluded (1) there were differences in learning outcomes beetween classes using the PBL model assisted by scientific articles and the class using discovery model and student scores in the experimental class were higher, (2) the increase in learning outcomes of medium and high criteria class using the PBL PBL model assisted by scientific articles is better than the class using discovery model

REFERENCES

Asfadi, B., Upik, Y., & Retni, S. B. (2014). Pengaruh Model Pembelajaran Berbasis Masalah (*Problem Based Learning)* Terhadap Hasil Belajar Biologi Siswa Kelas X sman 3 Kota Jambi. Skripsi Jurusan Pendidikan Biologi Program Studi Pendidikan FKIP Universitas Jambi.

Bahri, A., Devi, P., & Irma, S. I. (2018). Peran PBL dalam Meningkatkan Keterampilan Pemecahan Masalah Biologi. *Jurnal Sainsmat*, 7 (2), 114-124.

Bhinnety, M. (2008). Struktur dan Proses Memori. *Buletin Psikologi*, 16(2), 74-88.

Cahyono, T. 2015. *Statistik Uji Normalitas.* Banyumas: Yayasan Santri Banyumas (YASAMAS).

Fitri. (2016). Penerapan Model PBL Pada Pelajaran Bilogi untuk Meningkatkan Kompetensi dan Kemampuan Berpikir Kritis Siswa Kelas X. *Biosfer*. 1(1), 33-42.

Handika, I. & Wangid, M. N. (2013). Pengaruh Pembelajaran Berbasis Masalah terhadap Penguasaan Konsep dan Keterampilan Proses Sains Kelas V. *Jurnal Prima Edukasia*, 1 (1), 85-93.

Harnitasari, Nurhayati, & Suryani, I. (2015). Efektivitas Model Pembelajaran *Prroblem Based Learning* (PBL) terhadap Hasil Belajar Biologi Siswa pada Materi Pencemaran Lingkungan di Kelas XI SMA Negeri 2 Polewali. *Jurnal Bionature*, 16 (2), 103-109.

Herawati, L. 2016. *Uji Normalitas Data Kesehatan Menggunakan SPSS*. Yogyakarta: Poltekes Jogja Press

Hidayah, R. & Pujiastuti, P. (2016). Pengaruh PBL terhadap Keterampilan Proses Sains dan Hasil Belajar Kognitif IPA pada Siswa SD. *Jurnal Prima Edukasia*, 4 (2), 186-197.

Juanda. (2016). Penerapan Model PBL Pada Pembelajaran Biologi Untuk Meningkatkan Kompetensi Dan Kemampuan Berpikir Kritis Siswa Kelas X. *BIOSFER*, 1 (1), 33-42.

Kauchak, D., & Paul, E. 2012. *Learning and Teaching*: *Reasearch By Methods* (Sixth Edition). United States: Person Education.

Kono, R., Mamu, H. D., & Tangge, L. N. (2016). Pengaruh Model *Problem Based Learning* (*PBL*) Terhadap Pemahaman Konsep Biologi dan Keterampilan Berpikir Kritis Siswa Tentang Ekosistem dan Lingkungan di Kelas X Sma Negeri 1 Sigi. *Jurnal Sains dan Teknologi Tadulako*, 1,(5), 28–38. http://jurnal.untad.ac.id/jurnal/index.php /JSTT/article/download/6958/5595

Noviar, D., & Hastuti, D. R. (2015). Pengaruh Model *Problem Based Learning* (PBL) Berbasis *Scientific Approach* terhadap Hasil Belajar Biologi Siswa Kelas X Di SMA N 2 Banguntapan T.A. 2014/2015. *BIOEDUKASI*, 8(2), 42-47.

Novitasari, R., Anggraito, Y. U., & Ngabekti, S. (2015). Efektivitas Model *Problem Based Learning* Berbantuan Media Audio-Visual terhadap Motivasi dan Hasil Belajar Siswa pada Materi Sistem Ekskresi. *Unnes Journal Biology Education (UJBE)*, 4(3), 298–303.

Nurdyansyah & Fahyani, E. F. 2016. *Inovasi Model Pembelajaran Sesuai Kurikulum 2013*. Sidoarjo: Nizamia Learning Center.

Peraturan Menteri Pendidikan dan Kebudayaan (Permendikbud) Nomor 65 Tahun 2013 tentang Standar Proses.

Putera, I. B. N. S. (2012). Implementasi *Problem Based Learning* (BL) terhadap Hasil Belajar Biologi Ditinjau dari *Intelegence Quotient* (IQ). *Jurnal Pendidikan dan Pembelajaran IPA* 2(2)

Shoimin, A. (2016). *68 Model Pembelajaran Inovatif dalam Kurikulum 2013*. Yogyakarta: Ar-Ruzz Media

Sjukur, S. B. (2012).Pengaruh *Blended Learning* Terhadap Motivasi Belajar Dan Hasil Belajar Siswa Tingkat Smk . *Jurnal Pendidikan Vokasi*, 2(3), 368-378. https://doi.org/10.21831/jpv.v2i3.1043

Sugiyono. 2013. *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta

----------. 2017. *Metode Penelitian Pendidikan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta

Trianto. 2013. Model Pembelajaran Terpadu: Konsep Strategi, dan Implikasinya dalam Kurikulum Tingkat Satuan Pendidikan. Jakarta: Bumi Aksara.

Uran, L. L. 2018. Evaluasi Implementasi KTSP dn Kurikulum 2013 pasa SMK se-Kabupaten Belu, Nusa Tenggara Timur. *Jurnal Penelitian dan Evaluasi Pendidikan,* 22(1), 1-11. https://doi.org/10.21831/pep.v22i1.13309