THE EFFECT OF APPLYING PROBLEM BASED LEARNING ON STUDENTS' WRITING ABILITY

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Informasi Artikel	ABSTRACT
	The study was conducted to know whether there was a significant effect of applying problem based learning on students' writing ability. The study used quantitative with design one pretest post test design. Sample of the study consist of 32 students which taken by using total sampling technique. Instrument used writing test. Furthermore, the data was analysis by using descriptive and inferential statistics. Descriptive statistics showed the average of students' writing ability before applying problem based learning was 54.38 (adequate to fair) and students' writing ability after applying problem based learning was 84.13 (excellent to good). Based on inferential statistics, pair sample t-test showed Sig (2-tailed) 0.001. This score was less than 0.05 (0.001<0.05). It means, there was a significant effect of applying problem based learning on students' writing ability. Furthermore, the result of N-Gain formulation showed score 0.6 , this score was medium category. It is concluded problem based learning gave effect to students' writing ability in medium category.

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1. INTRODUCTION

Problem-based learning (PBL) is a recent development in education that has attracted the interest of academics in various fields (Dahms, 2016), including English language learning (Ali, 2019); (Ansarian, 2018). PBL provides opportunities for students to participate optimally in English language learning because this learning demands high level thinking from students (Weiss, 2023). This PBL is student-centered as a perfect approach in improving students' critical performance (Tan, 2003); (Uyeda, 2002); (Woods D. R., 1996). Collaboration is an advantage of this strategy because it requires students to work in groups to build the knowledge needed to solve problems. Independent learning and collaborative abilities define a learner-centered educational approach (Rotgans, 2011).

Students are triggered by certain challenges in PBL approach (Saieed Moslemi Nezhad Arani, 2024). PBL approach is learning that teaches students to work collaboratively to solve problems and mainly relies on reviewing previous knowledge, identifying knowledge gaps, and managing their own learning (Woods D. R., 1996). In line with the explanation of (Arani, Zare, & Sarani, 2024), every student discovers and understands necessary points, return to their group, and share with others, after problem solving, students provide feedback and consider what they have learned.

It is difficult to differentiate between project-based learning (PBL) and problem-based learning (PBL) because these two terms are often used interchangeably. The two terms problem-based and project-based learning are distinguished by (Larmer, 2014). The differences are as follows, (1) Project-based learning has predetermined goals, while problem-based learning shares the results and learning objectives with the teacher continuously, (2) Project-based learning is estimated to take longer than problem-based learning because it is

interdisciplinary, whereas problem-based learning is thought to be shorter because it only focuses on one subject, (3) Project-based learning follows general steps. but problem-based learning determines the steps required, and 4) Project-based learning is related to authentic problems while problem-based learning seems less related to authentic and real-world problems because it follows scenarios and cases.

Problem-based learning directs the teacher's role as a facilitator and does not lecture students in solving problems. Teachers offer problems to students and assist students in realizing the information and material needed to solve the problem. Next, the teacher provides students with the necessary feedback during the process of dealing with problems. Lastly, the teacher provides an assessment of the students' final product. These steps are considered to enrich students' problem solving skills, and are effective when dealing with independent problems that require higher cognitive load, as long as the PBL is well designed (Nilson, 2010).

A problem-based learning approach is the right choice in learning writing because this learning approach makes it easier for students to understand the material and problem-based learning is an activity that is structured and has predetermined goals. (Uliyandari, 2020). The ability of teachers, lecturers or instructors to transfer learning material can be developed to improve the quality of learning itself (Safaruddin S. I., 2020).

The application of problem-based learning can encourage students to become researchers, analytical and innovative (Kassab, 2017). Furthermore, problem-based learning is able to increase students' learning motivation by solving problems, involving students in discussion activities, and being able to encourage students to think and work rather than just memorizing and telling stories (Masek & Yamin, 2011), (Asyari, 2016) and (Safaruddin D. I., 2020)

Based on the previous explanation, the author considers the effectiveness of problem-based learning in language teaching. The author wants to investigate the effectiveness of problem-based learning on writing learning. The author wants to know whether the application of problem-based learning has a significant effect on writing learning. The indicators that will be used in this research are content, organization, grammar, vocabulary, mechanics.

The research that carried out an evaluation of problem-based learning was (Barenji, 2020) and (Lin L. , 2017) , their evaluation results reported that problem-based learning had a positive impact on students' reading comprehension. Furthermore, (Kumar, 2017) and Othman and Shah (2013) also investigated the positive improvement of students' writing skills, especially argumentative writing techniques. On the other hand, (Lin T. M., 2019) states that problem-based learning is also able to

improve EFL students' abilities in listening skills. Speaking of skills, problem-based learning also provides effectiveness for ESL and EFL students.{((Aryanti, 2017), (Kassem, 2018), (Montafej, 2021), (Sutrisna, 2020)}.

Significant improvement in English grammar skills because problem based learning can stimulate students' collaborative and cooperative nature. The problem-based learning approach also encourages students to be more active, more confident, have higher concentration, and be more able to provide solutions when working in groups. Students are also able to discuss problems, share ideas, and work together in solving problems (Puspitasari, 2019).

It's lined with the explanation above is (Yohana, 2019), namely the use of problem-based learning in psychology students at Surabaya State University to increase students' critical thinking. Furthermore, problem-based learning focuses on certain topics) and aims to study content, process skills, problem solving, and study problems in the real world.(Khoiriyah, 2018).

Apart from all the advantages above, PBL has limitations and weaknesses that cannot be ignored in that PBL requires quite a long time to implement, requiring good and effective preparation. Furthermore (Lim, 2023) explains the consequences where teachers must provide stimulus in helping students discuss a problem, appropriately guide students' critical thinking, provide resources, facilitate students' learning processes, assist students in defining and helping solve the problems given.

The steps taken in problem-based learning are: (1) the problem is oriented towards students, 2) forming students in groups to carry out investigations, 3) assisting students in carrying out investigations, 4) developing and presenting work, and 5) providing evaluations of solving student problems (Yulianti Rasyid, 2023). Similarity to (Nuralam, 2009), the five steps of problem based learning include 1) students understand of the problem, 2) students plan solution, 3) students solve the problem, and 4 students re checking. This explanation is in line with (Sanjaya, 2009), some of the weaknesses of problem-based learning are that students do not have interest in the problems given by the teacher so that students feel they do not have the enthusiasm to solve them, students feel that the problems given are not that important and there is no benefit in solving them, and problem-based learning requires quite a long time in learning.

2. RESEARCH METHODS

The approach of the research is quantitative by applying quasi experimental (one group pretest posttest design). The design of the research can be seen below:
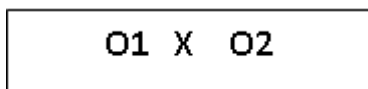
O1 X O2

Figure1. One Group Pre-Test Post-Test Design

Where: O1 : Pre-Test
X : Treatment of problem based   learning
O2 : Post-Test

The population of the research consist of 123 students of Institut Pedididikan Tapanuli Selatan (IPTS) Padangsidimpuan and the sample is 32 which are taken by using random sampling technique. Furthermore, the data is collected by using writing analytical exposition text and the criteria score of test is seen at table below:

NO	Score	Category
1	82 – 100	Excellent to Good
2	63 – 81	Good to Adequate
3	44 – 62	Adequate to Fair
4	5 5 – 24	Unacceptable
5	25 – 43	Not college level work

(adapted from Brown)

3. RESULTS AND DISCUSSION
RESULT

This addition shows the result of research include 1) the result of writing before applying problem based learning, 2) the result of writing after problem based learning, and 3) Is there a significant differences of writing before and after applying problem based learning? The results of the research are described based on analysis description and inferential statistics.

The result of writing ability before applying problem based learning (pretest)

After collecting the data by giving a set of pretest which is formed writing analytical exposition text, it is found that the highest score is 66 (good to adequate category) and the lowest score is 38 (unacceptable category). Based the whole data of pretest, the researcher find the mean score is 54.38 (adequate to fair category), median score is 55.5 (adequate to fair category), and mode is 53 (adequate to fair category).The researcher shows the specific calculation in the table below:

Table. 1. Score of mean, median, mode pretest

No	Criteria	Score	Category
1	Mean	54.38	adequate to fair
2	Median	55.5	adequate to fair
3	Mode	53	adequate to fair

Furthermore, the frequency distribution and histogram chart of students' pretest results can be seen in the following table below.

Table. 2. Frequency table from pretest

No	Interval Class	Frequnecy	Percentage
1	66 - 72	1	3.13%
2	59 - 65	8	25.00%
3	52 - 58	14	43.75%
4	45 - 51	4	12.50%
5	38 - 44	5	15.63%
	TOTAL	32	100.00%

Next, the data is described by using histogram chart. Based on the chart, the data is predicted in normal distribution. To be clear, the chart can be seen on chart. 1 below:
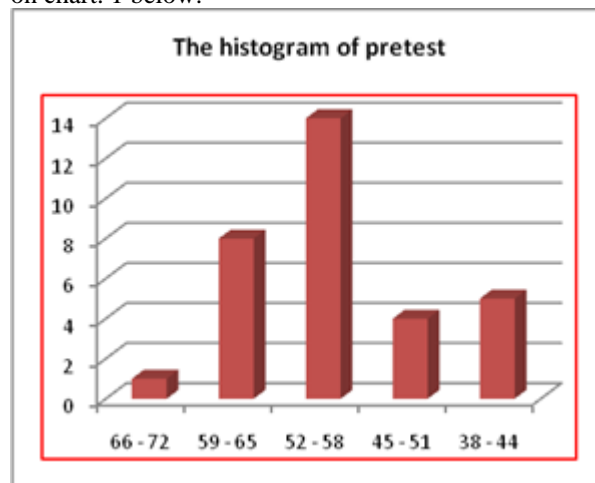

Chart 1. Histogram chart of pretest

Based on frequency table and histogram chart, there are 1 student get score between 66-77 (1%), 8 students get score between 59-65 (25%), 14 students get score 52 -58 (43.75%), 4 students get score between 45-51 (12.50%), and 5 students get score between 38-44 (15.63%).

The result of writing ability after applying problem based learning (pretest)

The score of students' ability is collected after applying problem based learning. The result shows the highest score is 91 (excellent to good category) and the lowest score is 77 (good to adequate category). While the mean score is 84,13, (excellent to good category), median score is 84,5, (excellent to good category) and mode score is 86, (excellent to good category). The mean, median and mode can be seen in table below

Table. 3. Score of mean, median, mode posttest

No	Criteria	Score	Category
1	Mean	84,13	excellent to good
2	Median	84,5	excellent to good
3	Mode	86	excellent to good

Then, frequency distribution of students' post test can be seen below:

Table. 4. Frequency table of post test

No	Interval	Frequency	Percentage (%)
1	89 -91	5	15.63%
2	86 -88	8	25.00%
3	83 -85	8	25.00%
4	80 -82	8	25.00%
5	77 -79	3	9.38%
	TOTAL	32	100.00%

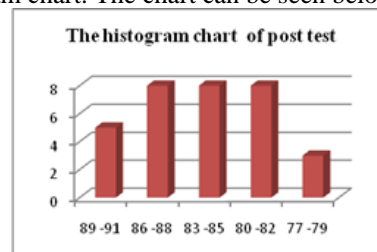Furthermore, the data is described by using histogram chart. The chart can be seen below

Chart 2. Histogram chart of pretest

Based on frequency table and histogram chart shows, there are 3 students get score between 77-79 (3%), 8 students get score between 80-82 (25%), 8 students get score 83-85 (25%), 8 students get score between 86-88 (25%), and 5 students get score between 89 -91 (15.63%).

Is there a significant differences of writing before and after applying problem based learning?
Normality test

Before showing the result of this question, this edition conducts classic assumption test. It is normality test. This test is conducted to know whether the data is normally distributed or not. The formulation of normality uses Kolmorov Smirnov and Shapiro Wilk and the hypothesis of normality can be seen below.

H_a : If significant score is more than 0.05, the data is normality distribution.

H_o : If significant score is less than 0.05, the data is not normality distribution.

The result of the normality test is seen on table.12.

Tabel. 5. Normality test of pretest and post test

Group	Formulation		α	Conclu sion
	Kolmogrov-Smirnov[a]	Shapiro-Wilk		
Pre test	.200	.089	,05	Normal Distribution
post test	.200	.530	,05	Normal Distribution

The significant score of the posttest based on the Kormogrov-Smirnov is 0,200 (0,200 > 0,05) while in Shapiro-Wilk formulation, the significant posttest is 0,530 (0,530 > 0.05). Based on the Kormogrov-Smirnov and Shapiro -Wilk formulation, the data of pretest and posttest is normal distribution. It is concluded that parametric statistics (Pair sample t-test) are used to know whether there is a significant differences of writing before and after applying problem based learning.

Pair sample t-test

Before using pair sample t-test, hypothesis is determine below:

Ha: There is a significant effect of applying problem based learning on students writing ability if significant (2-tailed) is less than 0,05

Ho: There no is a significant effect of applying problem based learning on students writing ability if significant (2-tailed) is less than 0,05. This is the result of pair sample t-test.

Table.6 The result of Paired Sample ttest

	T	df	Sig (2-tailed)
Pair 1 Pretest-Postest	-22.073	31	.001

Based the table paired sample t-test, the score of sig (2-tailed) is lower than 0.05 (001<0.05). It is concluded H_a is accepted and H_o is rejected. It means there is a significant effect of applying problem based learning on students writing ability

N-Gain formulation

N-Gain formulation is used to the effectiveness of applying problem based learning on students writing ability. The results of N- Gain shows that 72% of the sample get medium effect and 28% of sample get high effect. N–Gain average shows 0.6 (medium category).

Students learn collaboratively. The philosophy underlying problem based learning is constructive, independent, collaborative, and contextual. The theories that have been explained previously illustrate that problem based learning urges students to actively seek knowledge and add new experiences based on previous knowledge. This has an impact on students' cognitive development.

On the other hand, the weaknesses of problem based learning cannot be ignored because the lack of facilities and time constraints in implementing learning cause learning outcomes to be less than expected. Students are unable to solve problems due to lack of facilities. Likewise, time constraints in learning make students unable to collaborate optimally.

DISCUSSION

Problem based learning is learning that involves students to actively learn to solve problems. Students learn collaboratively. The philosophy underlying problem based learning is constructive, independent, collaborative, and contextual. The theories that have been explained previously illustrate that problem based learning urges students to actively seek knowledge and add new experiences based on previous knowledge. This has an impact on students' cognitive development.

On the other hand, the weaknesses of problem based learning cannot be ignored because the lack of facilities and time constraints in implementing learning cause learning outcomes to be less than expected. Students are unable to solve problems due to lack of facilities. Likewise, time constraints in learning make students unable to collaborate optimally.

4. CONCLUSIONS

The conclusion of the research is there is a significant there is a significant effect of applying problem based learning on students writing ability in Institut Pendidikan Tapanuli Selatan (IPTS) Padangsidimpuan. It can be seen from paired sample t-test formula, the score of sig (2-tailed) is lower than 0.05 (001<0.05). It is concluded H_a is accepted and H_o is rejected. It means there is a significant effect of applying problem based learning on students writing ability

5. REFERENCES

Ali, S. S. (2019). Problem-based learning: A student-centered approach. *English Language Teaching* .

Ansarian, L. &. (2018). *Problem-based language learning and teaching an innovative approach to learn a.* London: Springer.

Arani, S. M., Zare, A. A., & Sarani, A. (2024). Problem-Based Learning Affecting Features of Speaking Proficiency. *Journal of Research in Applied Linguistics* .

Aryanti, N. W. (2017). The impact of problem-based learning on productive skills and attitude toward English language learning. *Advances in Social Science, Education and Humanities Research,* , 15-20.

Asyari, M. A. (2016). Improving critical thinking abilitythrough the integration of problem based learning and group investigation. *International Journal for Lesson and Learning Studies* , 36-44.

Barenji, s. M. (2020). Problem -Based learning and its impact on EFL, learners engagement and resding comprehensison. *Journal of Llanguage Horizons* , 149-174.

Dahms, M. L. (2016). Teacher in a problem-based learning environment—Jack of all. *European Journal of Engineering Education* .

Kassem, M. A. (2018). Improving EFL students' speaking proficiency and motivation: A hybrid problem-based learning approach. *Theory and Practice in Language Studies* . , 848-859.

Khoiriyah, A. J. (2018). Problem-based learning: Creative thinking ability, problem-solving ability, and learning outcome of seventh grade students. JPBI. *Jurnal Pendidikan Biologi Indonesia* , 151-160.

Kumar, R. &. (2017). Problem-based learning pedagogy fosters students' critical thinking about writing. *Interdisciplinary Journal of Problem-Based Learning* , 1-10.

Larmer, J. (2014). *Project-based learning vs. problem-based learning vs. XBL.* US: George Lucas: Educational Foundation.

Lin, L. (2017). Impact of the probelem -based learning pedagogy on English learners' reading comprehension , strategy use, and active learning attitudes. *Journal of Education and trainning Studies* , 109-125.

Lin, T. M. (2019). The effects of problem-based language learning on the listening comprehension skills of Malaysian undergraduate students. L. *The Journal of AsiaTEF* , 996-1004.

Masek & Yamin, S. (2011). The effect of problem based learning on critical thinking ability: A theoretical and empirical review. *International Review of Social Sciences and Humanities* , 215-221.

Montafej, J. L. (2021). Implementation of hybrid and pure problem-based learning in EFL context: The case of speaking skill and self-confidence of Iranian undergraduate participants. *International Journal of Foreign Language Teaching and research* , 81-94.

Nilson, L. B. (2010). *Teaching at its best: A research-based resource for college instructors.* US: Jossey-Bass.

Nuralam, N. (2009). Pemecahan masalah sebagai pendekatan dalam belajar matematika. *Jurnal Educasi* , 142–154.

Puspitasari, M. J. (2019). The implementation of problem based learning in teaching speaking analytical exposition text to eleventh grades. *Retan* , 24-31.

Rotgans, J. I. (2011). Cognitive engagement in the problem-based learning classroom. *Advances in Health Sciences Education* .

Safaruddin, D. I. (2020). The effect of PJBL with WBL media and cognitive style on students' understanding and science-integrated concept application. *Jurnal Pendidikan IPA Indonesia,* , 384–395.

Safaruddin, S. I. (2020). The Effect of Project-Based Learning Assisted by Electronic Media on Learning Motivation and Science Process Skills. *Journal of Innovation in Educational and Cultural Research,* , 22–29.

Saieed Moslemi Nezhad Arani, A. A. (2024). Problem-Based Learning Affecting Features of Speaking Proficiency. *Journal of Research in Applied Linguistics* .

Sanjaya, W. (2009). *Strategi pembelajaran berorientasi standar proses pendidikan..* Jakarta: Kencana Prenada Media Group.

Sutrisna, G. &. (2020). Does problem based learning affect students' speaking skill and attitude toward ELL? *Retorika: Jurnal Ilmu Bahasa* , 31-138.

Tan, O. S. (2003). *Problem-based learning innovation: Using problems to power learning in the 21st century.* US: Thomson Learning.

Uliyandari, M. &. (2020). Penerapan Model Pembelajaran Inkuiri dengan Media alat peraga (Gunung Berapi) Pada Mata Pelajaran IPA SDN 013 Bengkulu Utara. *PENDIPA Journal of Science Education* , 74-78.

Uyeda, S. M. (2002). Solving authentic science problems: Problembased learning connects science to the world beyond school. *Solving authentic science problems: Problembased learning connects science to the world beyond school* .

Weiss, R. E. (2023). *Designing problems to promote higher-order thinking. In D. S. Knowlton & D. C. Sharp (Eds.),.* US: : Jossey-Bass.

Woods, D. R. (1996). Tutored versus tutor-less groups in problem-based. *American Journal of Pharmaceutical Education* .

Woods, D. R. (1996). Tutored versus tutor-less groups in problem-based. *American Journal of Pharmaceutical Education* , 231-238.

Yohana, W. S. (2019). Penerapan model problem based learning untuk meningkatkan

kemampuan berfikir kritis mahasiswa. *Jurnal Pendidikan (Teori dan Praktik)* , 399-408.

Yulianti Rasyid, R. H. (2023). The Supreme of Indonesian Language Learning Outcomes for Students through the Application of Problem-Based Learning Model. *Al-Ishlah: Jurnal Pendidikan* , 805-812.