



## The Effectiveness of Online Problem-Based Learning in Improving Students' Reading Comprehension with Different Learning Styles

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### Abstract

Reading is a fundamental skill for conveying information. Nowadays, various information is easily accessible quickly from many sources worldwide, so reading comprehension skills and mastering technology have been crucial for the challenges. Educators need a strategy to improve these skills. This study aims to measure the effectiveness of Problem-Based Learning through Google Classroom in improving the reading comprehension of students with different learning styles. This study used a quasi-experimental with a 2×4 factorial design on the tenth-grade students at SMAN 1 Sindang, Indramayu. The VARK questionnaire and reading comprehension test were carried out by one-sample Kolmogorov-Smirnov test and two-way ANOVA with Tukey's. The study exposed the result of Problem-Based Learning through Google Classroom and the influence of the student's different learning styles on the reading comprehension learning outcomes. This research indicated that the strategy was effective, but the student's different learning styles did not affect their learning outcome. Thus, there was no interaction between the teaching strategy and students' learning styles in improving their reading comprehension learning outcomes. This study offered a new perception of the importance of considering student's learning styles in organizing the appropriate materials, learning activities, and assessments to improve reading comprehension. The contribution of this study to the ELT in advance was a new awareness of the effectiveness of multi-mode digital settings in fulfilling the student's needs. Thus, it is confirmed that recent education is designed to accommodate students anywhere and anytime.

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## INTRODUCTION

The outbreak of covid-19 disrupted all life aspects, including the education sector. This situation triggered the world to adjust learning strategy to distance learning. The minister of education and culture issued an online learning regulation, the Indonesian the term *daring* or study from home, in the implementation of education during the emergency spread of covid-19 on March 24, 2020. Online learning is an actual resolution to manage classrooms or schools of the emergency massive hazards (Hermanto & Srimulyani, 2021). Moreover, this condition encouraged the educators to improve their mastering technology as the challenge in the 21st century lives. Technology is one of the challenges in the 21st century and has influenced all aspects of human lives. Such a variety of information is easily accessible quickly from various sources around the world requires the reading comprehension skills as part of speed, effectiveness, and efficiency in accessing and interpreting the information's meaning, and it requires abilities to select, manage and act on the information to be used dynamically and sustainably. The students are prepared to enter the post-industrial era in the 21st century (Astuti et al., 2018), and it is demanded a creative and innovative teaching strategy.

The other skill demands a proper learning strategy implementation is developing students' critical thinking and creativity to solve their problems. Glazer (2018) underlined that problem-based learning accommodates problem-solving and critical thinking in situated contexts. Furthermore, the students are trained to ask, answer, discuss, and decide the solutions to their problems (Narmaditya et al., 2018). Moreover, problem-solving has a crucial role as a main cognitive process to be explored, empowering people to be more creative members of society (Dabbagh, 2019). Critical and creative thinking are the two vital proficiencies of the four skills required in the 21st century; they can be figured

out by recognizing problems and discovering the resolutions (Kardoyo et al., 2020).

Another essential skill that is urgent to be achieved is communication. In the 21st Century, much information can be obtained easily through print media or provided online by information providers such as Google, Youtube, Whatsapp, Instagram, facebook, and other social media. Indeed, reading comprehension skills are needed to filter the variety of information offered instantly. The comprehension skill needs to be trained since it is a complex sub-skill. Arizona et al. (2018) stated that reading comprehension is a complex skill related to basic information identifying to guess, discuss, and make a conclusion to understand the writer's points of view; and the skill for emphasizing acknowledging and learning the written symbols in a text to get the ideas of both explicit and implicit messages (Nugroho et al., 2019).

The PBL is chosen for teaching reading comprehension skills in the study since it is a student-centred approach, which prioritizes cooperation in problem-solving occurring in real life. Students learn to find solutions by seeking information and clarifying the search with their friends and teachers. Thus, Griffiths (2016) agreed that the teacher's role was a facilitator who gives support, guidance and monitoring during the learning process. This idea has strengthened the concept that the role is to construct knowledge dealing with the exact problem and not providing instant knowledge (Li & Chen, 2018).

Along with developments in the 21st Century, education has also grown and developed by transporting different things to learning concepts, classrooms, curriculums, pedagogies, and learner profiles. This concept leads to growth and balancing the changes to provide students with better and more effective learning, as cited by Astuti et al. (2018).

Dealing with some previous studies about PBL that were conducted by Rahman et al. (2016); Mukhoyyar et al. (2018); (Ali, 2019); and Syahfutra & Niah (2019), the implementation of PBL has created a variety of results. The findings confirmed that PBL prepares students to be

flexible thinkers, stimulates students' critical thinking and creativity in the student's performance retelling story, improve their confidence; enhance networking skill, the value of teamwork, appreciation of interdisciplinary approach, reading comprehension skill, and motivation to express ideas; experience real-life context. In addition, this strategy empowered problem-solving, and critical and creative thinking as the two vital proficiencies of the four skills required in the 21st century (Kardoyo et al., 2020).

The implementation of online learning requires technology assistance, such as online platforms and mobile devices, to access the information anytime and anywhere. The study selected google classroom as the online classroom to be explored. Some previous studies concerned with google classroom implementation were conducted by Iftikhar (2016); Ballew (2017); Woodrich (2017); Ahmadi, 2018; Harjanto & Sumarni (2019); Hussaini et al. (2021) and lead to various results. The result created that adopting google classroom as an online environment in PBL is successful and effective in developing students' knowledge and convenient collaborative learning; students were pleased with the process when working on google docs, inspired students to be self-directed and responsible learners, developed thinking skills and self-confidence, improve teachers' and students' skills to grow and develop justifying in the century life and increase the motivation to participate in student-centered learning, promoting collaborative learning, minimizing the problem, organizing students' documents. It is time-saving, students can easily track their progress assessments, and parents can check and monitor the performances and progress of their children quickly. The use of google classroom during the covid-19 also investigated by Oktaria and Rohmayadevi (2021), who argued that it improved the students' skills, such as discipline and independent learning to explore the materials. Generally, the research finding illustrated the positive effect of google classroom implementation.

The success of the learning process can be achieved if the teachers can be involved in identifying and understanding learning styles for creating an active learning process. The teachers designed the material to match their students' learning styles, and the students have a deeper understanding of the materials to solve their problems. Therefore, Prithishkumar (2014), Alqunayeer and Zamir (2015) and Payaprom (2020) have a similar idea on identifying the student's learning style helps the teacher to facilitate the student's engagement in practical learning activities and create a positive learning atmosphere. Besides, Lahita et al. (2018) stated that by identifying students' learning styles can support the education quality and suit on individual learners.

However, this study differed because it had moderator variables, namely VARK learning style; visual, auditory, read, and kinesthetic. This study focused on measuring the effectiveness of pbl using google classroom in improving the reading comprehension of students with different learning styles by conducting a comparative test on each learning style and the result of improvement through pre-test and post-test for each learning style in improving reading comprehension skill in descriptive text. Thus, this research can be a reference to determine appropriate teaching strategies by considering students with different learning styles.

## METHODS

The researchers applied a quasi-experimental with a 2×4 factorial design to investigate the relationships among variables. The independent variables were teaching strategy (PBL and Conventional) and different students' learning styles as moderating variables, while the dependent variable was students' reading comprehension achievement. The classes are divided into two groups: the experimental group, which taught using PBL through Google Classroom, and the control group, which led using conventional learning through Whatsapp. Both groups got the same materials, periods, and

levels but different strategies and classroom platforms.

This research population was the tenth-grader of SMAN 1 Sindang at Indramayu Regency students in the academic year of 2020/2021, with seven tenth-grade classes totaling 288. The X-3 Natural Science and X Language Program classes were strained from the population with homogeneous English achievement scores. The study used a questionnaire and test as an instrument. The questionnaires were based on VARK Questionnaire for Younger People from version 8.01. The 16 multiple-choice questions have been translated into Indonesian for students' more profound understanding. The choices consist of statements measured by the four sensory modalities of VARK (Visual, Auditory, Read/write or Kinesthetic). The results of filling out the questionnaire were classified based on the preferences that often arise from student answers. The test was a reading comprehension question consisting of 20 items of multiple choice and allocated for 60 minutes. Those questions were assessed before (pre-test) and after treatment (post-test). In addition, the syllabus and lesson plans of the two teaching strategies were also validated by three senior high school English teacher validators. Pre-test and post-test were delivered to find the effect of treatment on the experimental groups. The results were measured using a score based on the aspects of reading comprehension skills adapted from Brown (2004), such as scanning (detailed information), skimming (main idea), deducing- meaning (the on context) and referencing. The data analysis was taken from the students' pre-test and post-test scores to investigate the treatment's effect on the experimental groups. Quantitative data were analyzed using descriptive and inferential statistics using SPSS software, namely normality, homogeneity, one sample Kolmogorov-Smirnov test and two-way ANOVA with Tukey's.

## RESULTS AND DISCUSSIONS

The result of the experimental group's dark questionnaires showed 11 students classified into visual, nine for auditory, ten for read or write, and six for kinesthetic preference. Furthermore, in the control group, six students were organized into visual, six for auditory, 14 for read/write, and 10 for kinesthetic preference.

Below are two tables that presented the result of the normality test of the post-test in both control and experimental groups. The tests were utilizing Kolmogorov-Smirnov statistical tests in examining the normality of the post-test data. Based on Table 1, the Kolmogorov-Smirnov test for the Post-Test of control group displayed that the data of each learning styles was; visual had  $Sig. = 0,548$ ,  $> 0,05$ , auditory had  $Sig. = 0,929 > 0,05$ , read/write had  $Sig. = 0,067 > 0,05$  and kinesthetic had  $Sig. = 0,125 > 0,05$ , so it can be said that post-test data of control group were normally distributed. Whereas, Table 2 showed the Kolmogorov-Smirnov test for the Post-Test of the experimental group displayed that the data of each learning style was; visual got  $Sig. = 0,582 > 0,05$ , auditory got  $Sig. = 0,264 > 0,05$ , read/write got  $Sig. = 0,231 > 0,05$  and kinesthetic got  $Sig. = 0,902 > 0,05$ , so it can be said that the post-test data of control group were normally distributed.

Then, the other result was presented on Table 3 which explained a summary of descriptive statistics for the post-test results. The data showed that the total average of the experimental group was 80.11 and it was bigger than the control group which reached 76.99. It was indicated that PBL through Google Classroom effectively improved reading comprehension of descriptive text.

**Table1.** Normality Test of Control Class Post-test

| One-Sample Kolmogorov-Smirnov Test |                |             |             |             |             |
|------------------------------------|----------------|-------------|-------------|-------------|-------------|
|                                    |                | Visual      | Auditory    | Read        | Kinesthetic |
| N                                  |                | 6           | 6           | 14          | 10          |
| Normal Parameters <sup>b</sup>     | Mean           | 79.1667     | 80.0000     | 74.2857     | 80.0000     |
|                                    | Std. Deviation | 4.91596     | 4.47214     | 5.83660     | 4.47214     |
| Most Extreme Differences           | Absolute       | .302        | .202        | .334        | .202        |
|                                    | Positive       | .302        | .202        | .237        | .202        |
|                                    | Negative       | -.216       | -.202       | -.334       | -.202       |
| Test Statistic                     |                | .302        | .202        | .334        | .355        |
| Asymp. Sig. (2-tailed)             |                | <b>.548</b> | <b>.929</b> | <b>.067</b> | <b>.125</b> |

**Table2.** Normality Test of Experiment Class Post-test

| One-Sample Kolmogorov-Smirnov Test |                |         |          |         |             |
|------------------------------------|----------------|---------|----------|---------|-------------|
|                                    |                | Visual  | Auditory | Read    | Kinesthetic |
| N                                  |                | 11      | 9        | 10      | 6           |
| Normal Parameters <sup>b</sup>     | Mean           | 77.8182 | 81.1111  | 81.5000 | 81.5000     |
|                                    | Std. Deviation | 6.19384 | 5.46453  | 6.25833 | 6.25833     |
| Most Extreme Differences           | Absolute       | .221    | .317     | .312    | .212        |
|                                    | Positive       | .221    | .238     | .188    | .132        |
|                                    | Negative       | -.143   | -.317    | -.312   | -.212       |
| Test Statistic                     |                | .221    | .317     | .312    | .212        |
| Asymp. Sig.(2-tailed)              |                | .582    | .264     | .231    | .902        |

**Table 3.** Post-Test Descriptive Statistics of Interaction among Teaching Strategy, Reading Comprehension on Descriptive Text, and Students' Learning Styles

| Group                                     | Learning Styles | Post-Test |          |    |
|---|-----------------|-----------|----------|----|
|   |                 | Mean      | Std. Dev | N  |
| Experiment – PBL through Google Classroom | Visual          | 77.83     | 6.19     | 11 |
|   | Auditory        | 81.11     | 5.46     | 9  |
|   | Read/Write      | 81.50     | 6.26     | 10 |
|   | Kinesthetic     | 80.00     | 8.94     | 6  |
|   | Total           | 80.11     | 6.71     | 36 |
| Control – Conventional through WAG        | Visual          | 79.17     | 4.92     | 6  |

|       |             |       |      |    |
|-------|-------------|-------|------|----|
| Total | Auditory    | 80.00 | 4.47 | 6  |
|       | Read/Write  | 74.29 | 5.84 | 14 |
|       | Kinesthetic | 74.50 | 4.38 | 10 |
|       | Total       | 76.99 | 4.90 | 36 |
|       | Visual      | 78.50 | 5.56 |    |
|       | Auditory    | 80.56 | 4.97 |    |
|       | Read/Write  | 77.90 | 6.05 |    |
|       | Kinesthetic | 77.25 | 6.66 |    |
|       | Total       | 78.50 | 5.81 |    |

The biggest mean (81.50) achieved by students with read or write learning style in experiment group, meanwhile the lowest mean (74.29) was achieved by students with the same learning style in control group.

After that, the homogeneity test was carried out to determine whether the sample

data was homogeneous. In this homogeneity test, the researcher used the most significant variance homogeneity test with the most negligible variance of the two data using the SPSS version 25 as follows. The result was shown in Table 4.

**Table 4.** Homogeneity Test of 1<sup>st</sup> and 2<sup>nd</sup> Class Learning Outcomes

| Levene's Test of Equality of Error Variance, b |  |                   |     |        |      |
|--|--|-------------------|-----|--------|------|
|  |  | Levene Statistics | df1 | df2    | Sig. |
| Score  | Based on Means                           | .920              | 7   | 64     | .497 |
|  | Based on Median                          | .518              | 7   | 64     | .818 |
|  | Based on the Median and with adjusted df | .518              | 7   | 54,605 | .817 |
|  | Based on trimmed mean                    | .855              | 7   | 64     | .547 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.  
 a. Dependent variable: Value  
 b. Design: Intercept + Learning Style + Class + Learning Style \* Class

After the normality test was found to be normally distributed and homogeneous variance, it was preceded with hypothesis testing. Hypothesis testing was carried out to answer the hypotheses proposed by previous researchers.

First, a two-way ANOVA test on the post-test results was required to determine the interaction between PBL through Google Classroom and Conventional through WAG and students with different learning styles in reading comprehension descriptive text.

**Table 5.** Tests of Between-Subjects Effects of Interaction between Experiment Group and Student's Learning Styles in Reading Comprehension Descriptive Text

| Tests of Between-Subjects Effects |                         |    |             |       |      |
|-----------------------------------|-------------------------|----|-------------|-------|------|
| Dependent Variable: Value         |                         |    |             |       |      |
| Source                            | Type III Sum of Squares | df | Mean Square | F     | Sig. |
| Corrected Model                   | 581.437a                | 7  | 83,062      | 2,404 | .030 |

|                                    |            |    |           |          |      |
|------------------------------------|------------|----|-----------|----------|------|
| Intercepts                         | 405633598  | 1  | 405633598 | 11740397 | .000 |
| Learning Style                     | 92,711     | 3  | 30,904    | .894     | .449 |
| Experiment Class                   | 159,919    | 1  | 159,919   | 4,629    | .035 |
| Learning Style<br>Experiment Class | *207,108   | 3  | 69,036    | 1998     | .123 |
| Error                              | 2211.216   | 64 | 34,550    |          |      |
| Total                              | 441621,000 | 72 |           |          |      |
| Corrected Total                    | 2792653    | 71 |           |          |      |

Based on Table 5, the data showed an interaction between PBL through Google Classroom affecting students' reading comprehension of descriptive text had  $Sig. = 0.035 < \alpha = 0.05$ . In other words, the result of the first hypothesis test showed that  $H_0$  was rejected. It was indicated that PBL through Google Classroom effectively improves the students' reading comprehension learning outcomes. Furthermore,

The study found that the average of students taught by PBL through Google Classroom was higher than students led by Conventional through Whatsapp (see Table 3). Therefore, the researchers concluded that PBL through Google Classroom significantly affects students' reading comprehension. According to the observation during the research, it was found that students engaged actively in group discussions to explore the material and assignments posted on Google Classroom. It can be seen from their individual and group assignments' record, which was submitted on time. The condition proved that the students' self-independent learning was improved.

The result of this study is in line with some previous research, which found that problem-based learning in an online setting improved the student's cognitive learning outcome to activate and practice independent learning, critical thinking, and problem-solving skills (Loppies et al., 2021). It also influenced knowledge acquisition for skills to control their learning process (Lou, 2019). Even though the model made students with high analytical skills more proactive and accessible to understanding the

subject matter, as cited in Reinsini et al. (2021), its effect reduced students' boredom in accepting lessons (Pratiwi & Wuryandani,

2020). Thus, it can be concluded that PBL through Google Classroom and learning styles contributed significantly and positively improved the students' reading comprehension achievement.

Second, the data in Table 5 also showed the result of interaction between students' learning styles affecting students' reading comprehension of descriptive text had  $Sig. = 0.449 > \alpha = 0.05$ . In other words, the result of the first hypothesis test showed that  $H_0$  was accepted. So it can be concluded that different student learning styles in VARK model did not significantly affect the student's learning outcomes in improving reading comprehension of descriptive text. This study's result aligned with the previous research conducted by Munzil And Perwira (2021), who identified that learning preferences do not determine a student's ability to learn from other teaching styles but merely indicate partialities or predilections. The misconception about learning style has also been argued by Furey (2020), who stated that student's different learning styles do not facilitate their learning acceleration. In addition, Ohman (2020) also found no evidence that the information not presented in a preferred manner will inhibit the knowledge transferred.

Meanwhile, the opposite result of the previous study agreed that the variety of modalities of information presentation encouraged both the students and teachers to engage in the student-centered approach shift

(Prithishkumar, 2018), and it was added by Rao and Arunachalam (2021), who argued that learning style prediction improved overall performance in the personalizing learning environment.

The third result of this study, presented on Table 5, showed the data of interaction between PBL through Google Classroom Conventional through WAG and students with different learning styles in affecting students' reading comprehension of descriptive text was 0.123 or higher than the significance level ( $Sig. = 0.123 > \alpha = 0.05$ ). The results of calculating variance analysis of the two unequal cell paths found that  $H_0$  was accepted, indicated there was no interaction. In this case, the interaction is the cooperation of two or more independent variables affecting the dependent one. The interaction occurs if the independent variable has affected a dependent one at various levels from

another independent one. Furthermore, Figure 1 presented the Estimated Marginal Plot, which determined the interaction between variables. The interaction effect is suspected to occur if the lines do not show parallelism. Figure 1 showed a parallel line, so it was suspected that there was no interaction. Based on Figure 1, it can be concluded that there was no interaction among PBL through Google and Classroom Conventional through WAG and students with different learning styles in affecting students' reading comprehension of descriptive text.

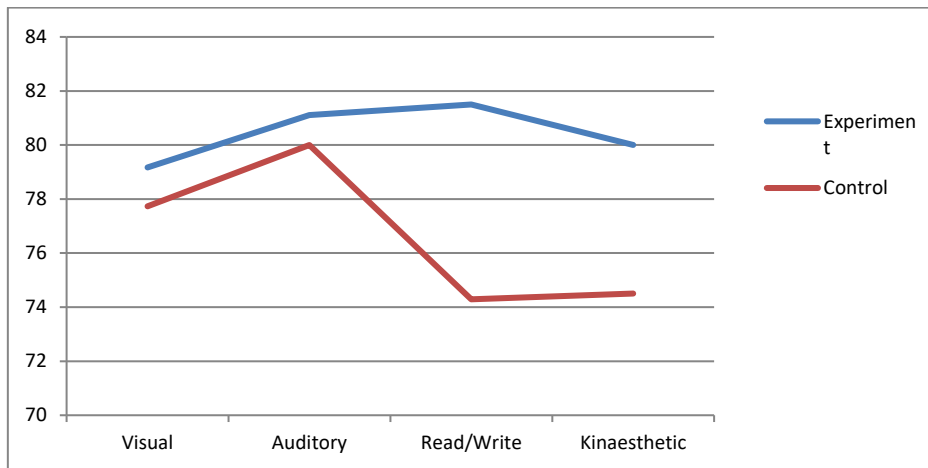


Figure 1. Estimated Marginal Means

This study found a similar result to Suprpto et al. (2019), who stated that different learning outcomes in Electronica Solid State Subject were found among experimental learning with CBT and analog experimenters and each learning style; learning styles have no impact on student learning outcomes. In short, students' overall average learning outcomes between learning styles do not significantly differ.

Contrary to the previous research, Oktari et al. (2020) found a significant interaction

between learning models, which provides space for students to learn according to students learning styles for improving learning outcomes

in cognitive and affective domains. Sari et al. (2020) also added that there was an interaction between PBL and test models and visual and kinesthetic learning styles on social studies learning outcomes. Furthermore, Rigusti et al. (2020) found there was an interaction between the learning model (PBL and scientific) and the learning styles (visual, auditory, and kinesthetic)



to the student's self-esteem. PBL had a more positive effect on the student's self-esteem than scientific learning. Those findings align with understanding students' developmental stages and are beneficial to adjusting their readiness to obtain better knowledge. This condition can be done by guiding them to be self-directed learners,

increasing their motivation and educational management (Saunders, 2020).

The multiple (pair-wise) comparisons using Tukey's HSD were used to explore which groups show indications of differing from one another, and the result is displayed in Table 6.

**Table 6.** Inter-row Mean Comparison Test Results

| Multiple Comparisons      |                          |            |            |      |                          |             |
|---------------------------|--------------------------|------------|------------|------|--------------------------|-------------|
| Dependent Variable: Value |                          |            |            |      |                          |             |
| Tukey HSD                 |                          |            |            |      |                          |             |
| (I) Learning Style        | (J) Learning Styles (IJ) | Mean       | std. Error | Sig. | 95% Confidence Intervals |             |
|                           |                          | Difference |            |      | Lower Bound              | Upper bound |
| audio                     | kinesthetic              | 4.1042     | 2.11252    | .221 | -1.4683                  | 9.6767      |
|                           | reading                  | 3.3750     | 1.93467    | .310 | -1.7283                  | 8.4783      |
|                           | visual                   | 2.3725     | 2.08224    | .667 | -3.1201                  | 7.8652      |
| kinesthetic               | audio                    | -4.1042    | 2.11252    | .221 | -9.6767                  | 1.4683      |
|                           | reading                  | -.7292     | 1.89710    | .981 | -5.7334                  | 4.2751      |
|                           | visual                   | -1.7316    | 2.04738    | .832 | -7.1323                  | 3.6690      |
| reading                   | audio                    | -3.3750    | 1.93467    | .310 | -8.4783                  | 1.7283      |
|                           | kinesthetic              | .7292      | 1.89710    | .981 | -4.2751                  | 5.7334      |
|                           | visual                   | -1.0025    | 1.86332    | .949 | -5.9176                  | 3.9127      |
| visual                    | audio                    | -2.3725    | 2.08224    | .667 | -7.8652                  | 3.1201      |
|                           | kinesthetic              | 1.7316     | 2.04738    | .832 | -3.6690                  | 7.1323      |
|                           | reading                  | 1.0025     | 1.86332    | .949 | -3.9127                  | 5.9176      |

Based on observed means.

The error term is Mean Square( Error) = 34.550.

The Table 6 contained the results of the mean comparison test between lines for each type of learning style; visual, auditory, read/write and kinesthetic. The data displayed multiple comparisons of each style had a higher significance level than  $\alpha = 0.05$ ; (e.g; *Sig.* = 0.221; 0.310; 0.667; 0.221; 0.981; 0.832; 0.310; 0.981; 0.949; 0.667; 0.832; and 0.949 > 0.05). It was shown in the significance column in the table. Besides, there was no sign (\*) to the right of the Mean Difference (IJ) number. Since the third null hypothesis was accepted, it can be concluded that there was no significant difference in reading comprehension achievement for students with different learning styles. Therefore, implementing

PBL through Google Classroom did not significantly improve

students' reading comprehension of descriptive text with VARK learning styles model.

The researchers also found additional results for using technology-enhanced learning; it contributes to teachers' teaching and students' learning. Besides minimizing the consumption of papers, it also helps students improve their digital literacy and language competence. The result aligns with Wahyuni et al. (2019), who stated that online learning supported the paperless classroom pedagogy.

However, with the advance and development of technology tools, teachers need to provide students to be competent and

competitive learners in entering the era of 4.0 industrial revolutions. This statement aligned to the idea that the students need some skills to face a global challenge which demands of the knowledge-based economy, information and communication technology. The recent condition requires a transformation from teacher-centered into student-centered learning (Payaprom, S., & Payaprom, P., 2020). Related to the use of Google Classroom as online platform, the result of the study also found an improvement in students' digital literacies, specifically when they could learn by removing some digital teaching materials, doing learning activities through digital tools such as smartphones, computers and laptops, managing learning activities through the Internet, and independent participation to lead learning activity. This result was also in line with Lin et al. (2019), who stated that digital learning positively exaggerated learning motivation and accomplished better on extraordinary learning outcomes.

## CONCLUSION

This research focused on measuring the effectiveness of Problem-Based Learning through Google Classroom in improving the reading comprehension of students with different learning styles, namely visual, auditory, read/write, and kinesthetic (VARK). Based on the data analysis results, using PBL through Google Classroom has proven to improve the students' reading comprehension learning outcomes. The total mean of the experiment group, taught by PBL through Google Classroom post-test, was higher than the control group, taught by Conventional strategy using WAG. The different students' learning styles in VARK's model did not significantly affect the learning outcomes in improving reading comprehension. In other words, students with auditory, kinesthetic, read or write, and visual learning styles taught using PBL through Google Classroom have no significant difference in their reading comprehension scores. Finally, there was no interaction between PBL through Google Classroom and different learning styles of

VARK's model on the student's learning outcomes in improving reading comprehension. However, it should be noted that overall, the mean of students with read/write style achieved the highest score among visual, auditory and kinesthetic.

Besides those results, there are some findings related to technology implementation during online learning. It encourages the teacher to practice using technology for something good in managing the class and easing interaction during the collaboration with the students during the distance learning. Furthermore, the success of the teaching and learning process also depends on the teacher and students' psychological aspects, such as awareness, strong motivation, and independence to solve their problems. However, this study is still limited to only exploring the reading comprehension of descriptive text using the PBL through google classroom for online learning. There are some other language skills, and many learning platforms have not explored yet for the future research concerning to other language skills such as listening, speaking and writing. In addition, the student's learning styles in this study were classified only into vark model. Therefore, prospect studies can determine other types of sorting (e.g; gender, level of motivation, level of participation, size of class, and other learning style models) as the other types of available organization.

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