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Application of Problem-Based Learning Model Assisted by Quizziz Game Media to Improve Learning Outcomes in Exposition Text Material in Class X SMK 7 Semarang

Almawati Amelia Putri [a,1,*], Ngatmini [b,2], Sri Kismiyati [b,3]

[a] Indonesian Education Study Program, PGRI University Semarang, Lontar Road No. 1 Semarang and 50125, Indonesia
[b] Indonesian Education Study Program, PGRI University Semarang, Lontar Road No. 1 Semarang and 50125, Indonesia
[c] SMK 7 Semarang, Simpang Lima Road No.1, RT.02/RW.01, Mugassari, Kota Semarang, Jawa Tengah 50249, Indonesia
[1] Almawatiputri20@gmail.com*; [2] ngatmini@upgris.ac.id; [3] srikismiyati41@guru.smk.belajar.id
* Corresponding Author

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ABSTRACT

The research aims to determine whether there is an improvement in student learning outcomes by applying the Problem-Based Learning (PBL) Model assisted by Quizziz media. This research uses a quasi-experimental method with a quantitative approach. The research sample consisted of all Class X students of SMK 7 Semarang. The experimental class applies the Problem-Based Learning (PBL) Model assisted by Quizziz media, while the control class does not use Quizziz media. The results showed improved student learning outcomes in both groups. However, the most significant improvement in learning outcomes occurred in the group that used the educational game application Quizizz. This study supports the hypothesis that the use of Quizizz can improve student learning outcomes in the exposition text material of Grade 7 Indonesian subjects. These results make an important contribution to our understanding of the application of the Quizziz media-assisted Problem-Based Learning (PBL) Model as a learning tool in vocational schools and its implications for student learning outcomes

Keyword: Learning Outcomes; Problem-Based Learning; Quizizz

KEYWORDS

Learning Outcomes
Problem-Based Learning
Quizzes

Introduction

Measurement is a systematic procedure used to determine numbers that represent certain individual or object characteristics (Allen &; Yan, 1979) in Sumardi (2020: 8). In the context of learning, those numbers refer to the scores obtained by learners after taking a particular exam or test. Specifically, in order for the measurement of student learning outcomes to be accurate, the measuring instruments (tests) used by teachers to measure student learning outcomes must also be good, namely measuring instruments must be valid and reliable. Meanwhile, in Indonesian, the term assessment is often matched with assessment. Assessment refers to various ways to collect information related to the competence and achievement of students (Dorobat, 2007) in Sumardi (2020: 13). Assessment is also interpreted as an effort to interpret measurement results into more meaningful information for students.

The learning process is related to the assessment system as an inseparable series. Where assessment and measurement are important things to be carried out as a reference in determining follow-up plans and feedback in determining the next steps that must be taken by teachers as learning agents so that the quality of learning increases and has added value). This assessment and measurement process provides quantitative and qualitative descriptions as student learning outcomes. The measurement of our learning outcomes also uses the right measuring tools, the correct way of measuring from the domains of knowledge (cognitive), attitudes (affective), and skills (psychomotor). Measurement of learning outcomes is a determination of numbers / scores (quantification), as well as determination of qualifications using the right measuring tools. The measurement data can be nominal, ordinal, interval and ratio scales, depending on the object we are measuring. Nominal, ordinal, interval and ratio scales are measurement scales (Hairum, 2020: 37).

In measuring learning outcomes, we must think about how the right measuring instrument, how to measure it from the object. And we must minimize the errors we make in measurements. As an indicator of success in a learning process, measurement and assessment must contain the absorption of teaching materials taught to achieve high achievement, both individually and in groups; and the behaviors outlined in the teaching (learning indicators) have been achieved by the learners, both individually and in groups. However, an indicator that is widely used as a measure of success is absorption (Djamarah, 2002) in (Zahara, Hanum, Johar, 2021: 180).

Education is the cornerstone for building a high-quality human resource base. One of the most significant challenges in today's educational landscape is enhancing students' learning outcomes in an effective and engaging manner. Innovative teaching methods are required to capture students' interest and increase their active participation in the learning process. In this context, the application of the Problem Based Learning (PBL) model assisted by the Quizziz game media emerges as a promising alternative. According to Rusman (2014: 129), learning outcomes are a number of experiences obtained by students that include cognitive, effective, and psychomotor domains. According to Bloom, learning outcomes can be grouped into three domains, namely cognitive, affective and psychomotor domains (Parsa, 2017). In principle, ideal learning outcomes can be measured from indicators covering all psychological domains that change as a result of student experience and learning process. The main key to obtaining learning outcome measures and data is to know the learning outcome indicators. According to Bloom with *taxonomy of education objectives* divide educational objectives into three domains, namely cognitive, affective, psychomotor.

Success in the learning process can be measured from understanding and mastering the material. Learning outcomes can also be said to be successful if learning achievement has high grades and fails if it has low grades. To be able to improve the learning outcomes of Subjects Indonesian grade 7 students at SMK 7 Semarang, schools must strive to improve the quality of education by improving the quality of learning that focuses on students, so as to improve the definition of concepts of understanding, knowledge and skills, mastery of material and also student motivation, so that they are ready in the world of work. Based on observations of learning outcomes at Vocational High School (SMK) 7 Semarang obtained daily score data on Subject Indonesian grade X students with an average of students scoring below the minimum completeness criterion, which is 70 in subject Indonesian. Learning carried out by teachers of Indonesian Language Subjects, teachers carry out learning with conventional and classical learning systems, so that students only listen and without doing practice about the material taught. This has an impact, when practicing the material taught students tend to be monotonous, cannot understand the lesson well, and experience difficulties in terms of understanding the concept of the subject matter to practice it. Learning is only teacher-centered and not yet learner-centered. In addition, teachers have not used learning media with inappropriate strategies and learning methods, where the assessment and measurement system uses measuring and assessment tools that are not in accordance with the characteristics of the material and students according to the interests and learning styles of students comprehensively. This situation makes students less optimal in understanding the lesson and getting learning results that are not in accordance with and below the KKM scores as determined by the school in subjects Indonesian Proposition Text material. This can be seen from the learning outcomes of grade X students of SMK 7 Semarang in learning Indonesian Exposition Text Material from 35 students who achieved new learning completeness of 20 students or 57% with KKM > 70

Low learning outcomes, with the imdiactor of student values below the KKM value can be pursued by improving the quality of learning by using learning models that are in accordance with the subjects studied in this study. One of the efforts to improve learning outcomes can be done by meeting student learning needs, both in student learning readiness, student interests and learning styles, differentiation in student assessment at the beginning, process, and end, as well as tier assessment (tiered assessment) in increasing student interest and activation of learning in the material taught first so that students feel interested in learning in a learning environment that invites active student learning (*well-being*). Student interest as an interest and motivation for students to learn in learning can be achieved by using existing digital learning platform technology according to the recommendations of the Ministry of Education and Culture and Technology,

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including K-Hoot, Mentimeter, Canva, Quizzes, G-Suite, and others. With the use of this digital learning platform, it is expected that students will be interested in the use of digital technology-based media in teaching and learning activities. Thus, teachers as learning agents can develop and apply various kinds of digital-based learning methods and media in accordance with the learning needs of students.

The use of Information Technology in learning will improve the academic performance of students. Obtaining understanding and knowledge of students in learning by applying Information Technology is better than traditional learning. This condition is due to the use of Information Technology can make learning more fun and faster by eliminating the need for time and location limitations. The use of Information Technology-based applications can affect the improvement of academic achievement. It is shown that the use of Information Technology not only improves student interaction but can also increase the success of learners. Studies related to Information Technology focus on how participants acquire new knowledge, skills, and experiences (Maksum, Arita, Safitri, 2023: 26).

Problem Based Learning (PBL) is a teaching method that emphasizes problem-solving as the main means of understanding material. This model actively involves students in the learning process, encouraging them to think critically and creatively, and work collaboratively to find solutions. PBL not only enhances students' understanding of the subject matter but also develops other important skills such as communication, teamwork, and problem-solving. Problem Based Learning (PBL) is a pedagogical approach that focuses on problem-solving as the primary method for understanding and mastering the subject matter. This model actively engages students in the learning process, encouraging them to think critically and creatively, and to work collaboratively to find solutions. PBL not only enhances students' comprehension of the learning material but also develops essential skills such as communication, teamwork, and problem-solving. These skills are vital for students' academic success and their future professional careers.

One of the ways to use technology in digital learning environments is to use a digital platform in the form of a learning competition. A digital learning quiz is an application that provides material in the form of questions thatstudents use to increase their subject (Pentury et al., 2021). This digital learning quiz belongs to the laptop/computer or learning basedmedia smartphone category. With digital learning quizzes, it is possible to create a learning atmosphere that is not boring and the material is well communicated (Basuki and Hidayati, 2019; Martanti and Rusdarti, 2019). One of the digital-learner quizzes is Quizizz. According to Mei and Adam, this Quizizz app is a digital quiz platform that requires only one screen on a smartphone or laptop, tablet or iPad (Mei et al., 2019;Yana et al., 2019). Each student's questions are also not the same because it uses a randomsystem. This reduces students cheating on each other. In addition, Quizizz is flexible, it can be completed anywhere, not necessarily in the same place (Grévisse et al., 2019).

Quizziz, as one of the technology-based educational game media, offers an interactive and enjoyable approach to the learning process. With interesting features like live quizzes, leaderboards, and instant feedback, Quizziz can increase students' learning motivation and make learning more engaging. The integration of Quizziz into the PBL model is expected to create a dynamic learning environment and support the achievement of better learning outcomes. Quizziz, a technology-based educational game platform, offers an interactive and enjoyable approach to learning. It features live quizzes, leaderboards, and instant feedback, making the learning process more engaging and motivating for students. The incorporation of Quizziz into the PBL model is expected to create a dynamic and stimulating learning environment, thereby supporting the achievement of better learning outcomes.

Teachers can use a variety of learning models used in the learning process. Lufri, Ardi, Relsas, and Arief (2020: 37) suggests that the learning model is a conceptual framework that contains systematic steps in organizing the teaching and learning process to achieve learning objectives and can be a direction for teachers in planning and implementing teaching and learning activities. One of the learning models that is student-centered and requires students to actively think is the PBL learning model. The PBL learning model is a learning method by completing case studies of problems or contextually and actual problems that occur in everyday life for students and students are required to solve and find solutions to problems by thinking critically with teacher guidance in

order to gain knowledge and be able to make decisions appropriately (Kurniawan et al., 2021: 87). Astafiria and Bayu (2021) stated by proving that by applying the PBL learning model it is proven to improve students' cognitive abilities. According to researchers, the technology-assisted PBL learning model is suitable for vocational students to improve cognitive, affective, and psychomotor abilities. Along with the development of technology, there are several educational media that can be used by teachers in an effort to increase student interest in learning with website-based media such as e-learning, quizizz, google classroom, e-book, Edmodo and others (Astafiria and Bayu, 2021). Quizizz is a game-shaped website that can be used as a learning medium because it has many interesting features such as memes, music, characters and themes as well as students competing for the highest points (Elisa et al.: 2023). Students will feel bored, if the teacher only gives questions in the form of sheets or work on books or LKS of each student. Media quizizz here is very helpful to increase student activeness and participation during the continuity of the teaching and learning process. With existing features, quizizz can be a suitable medium to increase student participation, conduct evaluations, and as a learning medium.

Based on previous research, it shows that with the PBL learning model and the use of quizizz media is proven to increase student understanding. Aniwidayati, and Puspitasari (2022) suggest that quizizz-assisted learning is proven to increase student participation in learning. With assessment features that are not found in paperless-based plain paper assessments, such as accuracy and speed in answering questions in the form of interactive game-based quizzes, the competitive spirit and intrinsic motivation of students will also increase. This is evidenced by the application of the PBL model assisted by quizizz media in the teaching and learning process in the classroom showing an increase in student scores in improving learning outcomes. In addition, increasing student activeness and learning outcomes teachers can also provide discussions about problems that are difficult for students to do, so that students will understand the material taught. The purpose of this study is to examine the impact of using the PBL learning model with the help of quizizz media on learning outcomes Indonesian Exposition Text Material for grade X students of SMK 7 Semarang.

Methods

Research Design

Research Approach

This study used a quantitative approach. This approach is based on the philosophy of positivism and fulfills scientific principles, namely concrete / empirical, objective, measurable, rational, and systematic. (Sugiyono, 2016: 13). The quantitative approach of this study aims to examine the cause-and-effect relationship between the use of the Quizizz digital learning platform on the learning outcomes of Class X students of Subjects Indonesian Exposition Text material at SMK 7 Semarang.

Types of Research

This research is a quasi-experimental type. The quasi-experimental design in this study is *the Non-equivalent* Control Group Design (*pre-test* and *post-test*) as table 1 below:

Table 1 Research Design – Quasi Experiment

Experimental Group	O_1	X_1	O_3
Control Group	O_2	X_2	O_4

In this study, researchers used analytical instruments in the form of multiple-choice questions assisted by quizizz media. The analysis test of this study used a paired sample t test conducted using SPSS version 26.

Data Collection

The data collection technique used is to collect information needed data collection techniques such as interviews, and *pre-test* and *post-test* written tests to obtain data on student learning outcomes before and after being given *treatment* using Quizizz where each test consists of 30 questions, as well as collecting reference subject matter and relevant research. At this stage

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researchers collect data through observation, interviews, documentation and student *pretest* scores.

Data, Data Sources and Research Subjects

Data

Qualitative Data

Qualitative data is related to quality values such as very good, good, enough, bad, and so on which are symbolized to show the order of levels (Arikunto, 2013: 161). Qualitative data were obtained from non-test techniques. This data can be obtained from interviews, observations or field notes, and questionnaires conducted at SMK 7 Semarang.

Quantitative Data

Data in the form of numbers or qualitative data that is numbered is called quantitative data (Sugiyono, 2016: 23). This data is obtained from the test technique. Quantitative data in the form of midterm learning outcomes of grade X students at SMK 7 Semarang Indonesian learning content Exposition Text Material in 2022 as initial data as well as *pretest* and *posttest results*.

Data Sources

The data source used by the researcher uses field data sources. The source of research data is obtained from where the data subject can be obtained (Suharsimi, 2017: 172). The data obtained in this study was obtained by direct observation into the field at the intended research object, namely teachers and grade X students of SMK 7 Semarang.

Research Subjects

The subjects in this study were all Class X students at SMK 7 Semarang. The subjects of this study were divided into an experimental group and a control group. The experimental group, namely 20 students and the control group consisted of 15 selected by *purposive sampling technique* from grade X students of SMK 7 Semarang.

Research Variables

Independent *Variable*

Variables that cause changes or affect dependent variables are called independent variables (Sugiyono, 2017): 61). The independent variable in this study is *the PBL Learning Model with Quizziz Exposition Text*.

Dependent Variable

A dependent variable is an output, criterion, consequent variable. (Sugiyono, 2017: 61). This variable becomes the result of the influence of the independent variable. The dependent variables in this study are learning outcomes Indonesian Exposition Text Material that emphasizes cognitive aspects.

Population and Research Sample

Research Population

According to Suharsimi (2017: 173) population is the number of all research subjects. The population of this study is the entire research subject determined by the researcher and the conclusion is drawn is grade X students of SMK 7 Semarang as many as 35 students.

Research Sample

The research sampling technique uses *non-probability* sampling techniques in this study using saturated sampling techniques, because all members of the population are used as samples (Sugiyono, 2017: 124). Therefore, the sample in this study was all grade X students of SMK 7 Semarang totaling 35 students.

Data Collection Techniques and Instruments

Suharsimi, (2017: 266) explained that in research collecting data is the most important work. Data collection techniques in this study were carried out with test and non-test techniques. Test techniques are carried out by *pre-test and post-test* while non-test techniques are carried out by observation, interviews, document data. and questionnaires.

Data Analysis Techniques

Initial Data Analysis

Initial data analysis used descriptive analysis and normality tests. Descriptive analysis to determine the results of interviews conducted with grade X teachers of SMK 7 Semarang. Normality test to test student learning outcomes through previous *student pretest* and *posttest* results. In this study, normality testing used *Shapiro-Wilk* assisted by SPSS version 25. Normal or not pretest and posttest data can be known if:

The Sig value > 0.05, then the data is normally distributed.

The Sig value < 0.05, then the data is not normally distributed.

Final Data Analysis

Hypotesis Test (*T-Test*)

Test hypotheses statistically statistical tests using the Paired Samples Test and Independent Samples Test. However, before the hypothesis test is carried out, researchers first conduct prerequisite tests (normality test and homogeneity test). The normality test uses the Saphiro-Wilk test, while the homogeneity test uses Levene's test.

Test Average *Gain*

According to Lestari (2015: 235), the N-gain test is the difference between *post-test* and *pre-test* values. Gain showed an improvement in learning outcomes of simple essay writing skills after the use of *PBL Learning Model media with Quizziz Exposition Text Game*. The data to be analyzed descriptively is the value obtained from the results of *the pretest* and *posttest* assessments by calculating the percentage of student learning completeness.

Result And Discussion

Result

Data on student learning outcomes were measured by pretest and posttest using 1 control group in and 1 experimental group in Class X students at SMK 7 Semarang. The first step calculates the average score of the test before and after each group. *Pre-test* is used to measure student learning outcomes before treatment, and *post-test* is used to measure student learning outcomes after treatment. The results of the average score of student learning outcomes are shown in Table 2.

Table 2. Results of the Average Score of Student Learning Outcomes

Group	*Pre-Test*	*Post-Test*	Value Difference
Experiment	57,56	73,63	16,07
Control	79,88	93,62	13,74

Based on table II of student learning outcomes scores that show the results of calculating the average *pre-test* and *post-test* scores of control group students, there was an increase of 16.07 points from *the pre-test* score of 57.56 to 73.63 in the *post-test*. In the control group, the score increased by 13.74 points, from 79.88 in the *pre-test* to 93.62 in the *post-test*. The next step is to check the data needs using a normality test.

The results of the normality test are used to determine whether the distribution of data conforms to the normal distribution pattern. Data normality is very important because normally distributed data can be considered representative for the population in general. In this study, the normality test applied was the Kolmogorov-Smirnov test. The criterion for the normality test is if the Significance value (*Sig.*) or probability is less than 0.05, then the null hypothesis (H0) is rejected, while if the value of *Sig.* or a probability of more than 0.05, then H0 is accepted. The results of the normality test calculation can be seen in tables 3 and 4.

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Table 3. Control Group Normality Test Results

	Test	Saphiro-Wilk		
		Statistic	Df	Sig.
Control Group Learning Outcomes	*Pre-Test*	0.914	15	0.148
	Post-Test	0.876	15	0.067

Based on table 3, the results of the control group's normality test showed a Sig value on the pretest of 0.148 and a *Sig.* value on the posttest of 0.067. Both *Sig.* values are greater than 0.05 so that it can be concluded that the test data is normal in *the pre-test* and *post-test values*.

Table 4. Experimental Group Normality Test Results

	Test	Saphiro-Wilk		
		Statistic	Df	Sig.
Control Group Learning Outcomes	*Pre-Test*	0.953	20	0.083
	Post-Test	0.948	20	0.096

Based on table 4, the normality test results of the experimental group *Sig.* at a *pre-test* value of 0.083 and *Sig.* at a *post-test* value of 0.096. All *Sig.* values in *pre-test* and *post-test* values are greater than 0.05 so that conclusions can be drawn from the values of *pre-test* and *post-test values of the* experimental group proved to be normally distributed.

The next step that is a prerequisite is to use a homogeneity test. Homogeneity testing should be performed to show whether the sample data set is from a population with the same variant. The homogeneity test uses the significance level (α) = 5%. Decision-making guidelines in this study if *Sig.* > 0.05 then the scattered data is homogeneous data and if Sig. < 0.05 means the data is uneven. The homogeneity test results are shown in table 5.

Table 5. Experimental Group Normality Test Results

		Levene Statistic	***df1***	***df2***	***Sig.***
Learning Outcomes	*Based on Mean*	1.702	1	35	.328
	Based on Median	1.392	1	35	.377
	Based on Median and with adjusted df	1.392	1	33.133	.377
	Based on trimmed mean	1.625	1	35	.339

The results of homogeneity testing in experimental and control groups are presented in table 5 in the *Sig. column based on trimmed mean* showing a value of 0.339. Because the value in the column is greater than 0.05, it can be concluded that the value of the pretest data in the experimental group and also the control group is identical or homogeneous data. After all *pre-test* and *post-test* data of the control group and experimental group meet the conditions of normal distribution in normality testing and homogeneous in homogeneity testing, then proceed to further testing with hypothesis testing using *paired sample t-test*. *Paired sample t-test* is a method for testing hypotheses where the data used must be paired.

The study was conducted with *paired sample t-test* using SPSS program with significance level (α) = 5%. The hypothesis in this study can be determined if Ho: there is no difference in learning outcome scores on *pre-test* scores and *post-test* scores, which means there is no effect of the application of learning models on increasing student learning outcome scores, while for Ha: there is a difference in learning outcomes between *pre-test* results and *post-test* scores which means that there is an influence between the application of learning models using Quizziz on improving student learning outcomes of exposé text material. Decision making if *Sig.* (*2-tailed*) > 0.05, then Ha is rejected, but if *Sig.* (*2-tailed*) < 0.05, then Ha is accepted. The paired *sample t test results* of the control group and experiments can be seen in Table 6.

Table 6. Experimental Group Normality Test Results

Pair	*Pre-Test dan Post-Test*	*Average*	*Standard Deviation*	*Significance*	*Conclusion*
1	Experimental Group	47,053	17,911	0,000	H_1 Accepted
2	Control Group	43,530	11,959	0,000	H_1 Accepted

Based on the results of the 1 pair 1 hypothesis test as shown in Table 6, it was found that the significance value (*2-tailed*) was lower than 0.05. This indicates rejection of H0 or acceptance of H1. That is, there was an increase between the average *pre-test* and *post-test* scores in the experimental group. The average *pre-test* and *post-test* scores before the application of *the Problem Based Learning* Model using Quizziz Media were 57.56 and 73.63, while *the pre-test* and *post-test* scores after using Quizizz were 79.88 and 93.62. This showed a 47% improvement in student learning outcomes between *pre-test* and *post-test* in experimental classes. Furthermore, in the 1 pair 2 hypothesis test, the significance value (*2-tailed*) is also lower than 0.05, which means H0 is rejected or H1 is accepted. This indicates an increase in average learning outcomes in the control group. The control group's *pre-test* mean was 79.88, while the post-test mean was 93.62. Thus, there was a 48% increase in student learning outcomes between *pre-test* and *post-test* in the control class on the exposition text material of Subject Indonesian.

The results of the *Paired Sample t-test* in both sample groups showed an increase in learning achievement in both the experimental and control groups. This can be caused by learning activities that have been carried out in both groups. Therefore, the first hypothesis stating that the application of the *Problem Based Learning* (PBL) model using Quizizz media can improve student learning outcomes on the exposition text material of Indonesian Language subjects, is proven. Table 6 shows statistical summaries of both groups, namely the experimental group and the control group, used in hypothesis test 2 using parametric analysis of *the Independent Samples Test*. This test was chosen because the data consists of two samples that are independent or different from each other. Next, the Independent Samples Test test output is divided into two parts. The first part is the results *of Levene's Test for equality of variances*, which is used to determine the homogeneity of variances between the two groups. The second part is the *t-test for equality of means*, which is used to test the average similarity between the two groups. Details of the results of this Independent Samples Test analysis can be seen in Table 7.

Table 7. Summary of experimental and control class statistics

Class	*Average*	*Standard Deviation*
Experimental Group	79,88	7,978
Control Group	93,62	2,317

Table 8. Independent Samples Test Results

	Levene's Test f		*t-test for Equality of Means*		
	F	**Sig.**	**T**	**df**	**Sig. (*2-tailed*)**
Equal variances assumed	23,822	0,000	7,314	78	0,000
Equal variances not assumed			7,314	44,619	0,000

In the test column *of Levene's Test*, a significance value (*Sig.*) of 0.000 was found. In accordance with the decision-making criteria, since the value *of Sig.* is smaller than 0.05 (0.000 < 0.05), the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. This shows that there is a significant difference in variance between the experimental group and the control group using Media Quizizz in the application of *the Problem Based Learning* (PBL) model. In other words, the two groups do not have homogeneous variance. Furthermore, *a t-test* analysis

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was carried out in the *t-test column for Equality of Means*. In this column, a sig value of 0.000 is found. Based on the decision-making criteria, since *the value of Sig.* is less than 0.05 (0.000 < 0.05), H0 is rejected and H1 is accepted. Table 4 shows that the average learning outcome of the control group was 79.88, while the average learning outcome of the experimental group was 93.62. This shows that there is a significant difference in learning outcomes between students who use Quizizz media in the experimental group and controls in the application of the Problem Based Learning (PBL) model of exposition text material in Subject Indonesian, with the experimental group achieving better learning outcomes. Therefore, the second hypothesis stating that the learning outcomes of students who use Quizizz media in the application of the *Problem Based Learning* (PBL) model are significantly higher than students who do not use Quizziz media in the application of the Problem Based Learning (PBL) model of exposition text material for Indonesian subjects, is proven.

Discussion

The results of this study revealed significant differences in student achievement before and after applying the Problem Baased Learning (PBL) model assisted by Quizziz media. However, when compared between the experimental group and the control group based on the data in Table 5, it can be seen that the experimental group by applying the Problem Baased Learning (PBL) model assisted by Quizziz media achieved better learning achievement. This shows that when students engage in a learning process that matches their interests and is interesting, it can increase learning motivation and have a positive impact on the learning outcomes achieved. These findings are consistent with previous research by Ab. Rahman et al. (2022); Chaiyo &; Nokham (2017); May et al. (2020); and Zhao (2021). In addition to these studies, Mulyati & Evendi (2018) conducted research in mathematics teaching and found that the use of educational game applications such as Quizizz can increase student motivation and achievement in mathematics. Their results showed that students who engaged in game-based learning experienced significant improvements in learning outcomes compared to conventional learning methods. Therefore, based on the results of this study, it can be concluded that the application of the Problem Based Learning (PBL) model assisted by Media Quizziz material for the exposition text of Indonesian subjects significantly increases student achievement compared to without using Quizziz media.

According to Iten & Petko (2017), learning designed like playing games will be more interesting. In learning Indonesian class X exposition text material of SMK Negeri 7 Semarang, students tend to be more serious and enjoy the learning process. The level of pleasure in using Quizziz auxiliary media has a positive effect on students' intelligence in learning. A study conducted by Cadieux Bolden et al. (2020) found a relationship between fun and students' motivation to continue engaging in game-based education. They also found that students were more focused and paid more attention to quizzes when using Quizizz compared to other educational apps. In addition, Chaiyo & Nokham's (2023) research also shows differences in students' perceptions of the use of various educational applications.

The application of *the Quizizz media-assisted Problem Based Learning* (PBL) model has proven to have a significant effect on improving student learning outcomes with posttest scores higher than *pre-test scores*. Researchers previously found that the application of *the Quizizz media-assisted Problem Based Learning* (PBL) model was proven to increase student participation and grades. This can be achieved because students try to think about the material discussed so as to stimulate comprehension skills in contrast to conventional learning models where students are only presented by the material. The role of teachers in the application of *the Problem Based Learning* (PBL) model assisted by Quizizz media as a learning facilitator by stimulating material that interests students while learning is focused on students.

Learning in class is also carried out by dividing groups with teachers giving problems that will be solved by students. With group division, it can stimulate students who are not active to become active in their respective groups. Students are also given the freedom to find material as a reference in learning so as to make students more active in the learning process material. As students are active in the learning process, it will indirectly make it easier for students to understand the material taught so that the value of learning outcomes can be met.

Besides the advantages mentioned above, this study has limitations. These limitations, like Quizizz's media, consume time, so if a quiz has started but there are students who arelate, the student's quiz process may affect their rank even though theirscore is high and requires an internet connection. network and communication tools, such as laptops or mobile phonesto use them. In addition, the weakness of this development is that this study is limited only to developing amiddleman and then testing the validity of the developed environment, without testing the effectiveness of thedeveloped environment. Based on these weaknesses, similar studies are expected to be developedto determine the effectiveness of this resource developed for Quizizz.

Conclusion

This study aims to test student learning activity and effectiveness comparatively through experiments on the application of *the Problem Based Learning* (PBL) model assisted by Quizziz media exposition text material for Indonesian subjects, and found that the application of *the Problem Based Learning* (PBL) model assisted by Quizziz media can improve student learning outcomes. Students gave positive feedback regarding the application of Quizziz's *media-assisted Problem Based Learning* (PBL) model, stating that (1) this application is easy to use, (2) interesting, (3) fun, and (4) able to increase their interest in active learning. They also like certain features in the app, such as leaderboards that show their ranking during the game. Furthermore, students prefer to follow learning with the application of the *Problem Based Learning* (PBL) model assisted by Quizziz media rather than following classical and conventional learning. The study also compared student feedback between a group that applied the Quizziz media-assisted *Problem Based Learning* (PBL) model and a group that did not use Quizziz media. The results showed that both groups experienced improved learning outcomes. However, the most significant improvement in learning outcomes occurred in the Problem *Based Learning* (PBL) model application group assisted by Quizziz media. This can be interpreted as contributing stimulation in the application of *the Problem Based Learning* (PBL) model assisted by Quizziz media is able to motivate students to learn and improve their concentration when doing quizzes in class.

In this study, learning using the group method. Learning in class the group method is carried out by dividing groups with teachers giving problems that will be solved by students. With group division, it can stimulate students who are not active to become active in their respective groups. Students are also given the freedom to find material as a reference in learning so as to make students more active in the learning process material. As students are active in the learning process, it will indirectly make it easier for students to understand the material taught so that the value of learning outcomes can be fulfilled.

Based on these findings, this study concluded that the application of the *Problem Based Learning* (PBL) model assisted by Quizziz media had a positive impact on student activity, interest in learning, and student learning outcomes of the exposition text material of Indonesian subjects.

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