

The effectiveness of the project-based learning model assisted by audio visual media in writing opinion texts in vocational schools

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KEYWORD

*Audio visual;
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ABSTRACT

Learning to write opinion texts is very required in the Vocational Curriculum. However, students still have many difficulties in writing opinion texts. This research aims to overcome the problem of writing opinion texts in vocational schools through a Project Based Learning model assisted by audio-visual media. The object of the research was carried out at SMK Budi Tresna Muhamadiyah Cirebon grade XII. The research method, through experiments, tests the effectiveness of the Project Based Learning model in improving students' ability to write opinion article texts. The research instrument is in the form of a test to collect data on students' ability to write opinion article texts with the help of audio-visual media. The test data is in the form of text of opinion articles written by students both through pretests and post-tests. The results showed that learning in the experimental class using the Project Based Learning model got a score of 1790 with an average score of 89.5 higher than the control class using the contextual model got a score of 1340 with an average score of 67. In addition, the results of significant tests that have been carried out by the experimental class ($KE > KK$), H_0 is rejected and H_1 is accepted, then the VAK Project Based Learning model is declared effective. Based on the calculation of the significance test results, a calculation of 3,515 was obtained at a significant level of 5% and a table of 1,687. This shows that H_1 is accepted and H_0 is rejected. Thus, applying the Project Based Learning model to write opinion article texts for grade XII students of SMK Budi Tresna Muhammadiyah Cirebon for the 2024/2025 school year is effective.

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Introduction

Writing is a thinking activity (Rasyad et al., 2017; Susilo & Wahyuni, 2019). The thinking process is carried out in two ways: what and how to write (Shayakhmetova et al., 2020). Writing skills require cognitive abilities in remembering, speaking, and thinking at the same time (Azis & Husnawadi, 2020; Bolsunovskaya & Rymanova, 2020; Sopandi, 2020). The ability to write articles that every student must have is inseparable from the stages of thinking metacognition skills (Abdulrahman et al., 2020; Gebremariam & Hiluf, 2023). Every student is expected to be able to express thoughts in written form, as a means of thinking that the realization of thinking activities is in the form of connecting, comparing, opposing, choosing, interpreting data, and concluding the analysis of each idea to give rise to new ideas or aspects that are expressed in the form of writing or oral exposure of a certain linguistic event (Asnas & Hidayanti, 2024; Romadhon et al., 2018).

Kompetensi penyampaian gagasan secara substansial terdapat di Kurikulum 2013 edisi revisi 2016. Kompetensi yang digunakan sebagai dasar penelitian untuk meningkatkan kometensi siswa menulis yaitu (1) mengidentifikasi fakta dan informasi yang digunakan sebagai bahan tulisan; dan (2) menyajikan gagasan ke dalam artikel berdasarkan informasi dan fakta (Heriyani & Susilo, 2021; Susilo & Wahyuni, 2019). Kemampuan siswa menulis teks dapat dilihat melalui tulisan yang dihasilkan berdasarkan gagasan-gagasan yang dimiliki siswa (Maharani et al., 2023; Romadhon et al., 2018). Salah satu bentuk kegiatan menulis yang diamanatkan dalam Kurikulum 2016 yaitu menulis teks artikel opini.

The text of an opinion article is a popular scientific work that refers to the reference of applicable thinking (Sakaria et al., 2016). That is, starting from existing facts and then triggered in the form of ideas or opinions (Kashkin & Shilikhina, 2009; Shayakhmetova et al., 2020). An opinion article, also known as an op-ed, is a written comment that reflects the author's opinion on a particular subject (Purnomo, 2019). Some important notes about opinion article text: (1) opinion articles present the author's point of view on a subject, often aimed at persuading or informing the reader about a particular issue or topic, (2) articles usually begin with a clear statement about the topic and why it is important, based on the author's perspective, (3) opinion article text presents a convincing argument, often supported by personal evidence and experience, To support the author's opinion, (3) the conclusion must be strong and forward-looking, providing a clear solution or call to action, (4) include relevant data and evidence reinforcing the argument, especially in scientific or factual topics, and (5) the writing must be original, clear, and well-structured to keep the reader's interest (Ibda, 2019; Winaryuni et al.,

2024). Students' understanding of the skill of writing opinion article text is something that must be done.

The impact of the problem of learning to write articles can be indicated by the learning outcomes of students' writing skills that are still not optimal (Bolsunovskaya & Rymanova, 2020; Harmawan et al., 2023). Departing from this reality, researchers see the need for a learning model that can improve students' ability to write articles. The learning model used in this study is Project-Based Learning. The form of novelty in this learning involves audio-visual media as an attraction to foster students' motivation to learn in writing articles. This media is a form of media that can lead students to explore content (material substance) by using various ways that are meaningful to them and conducting collaborative experiments (Abdulrahaman et al., 2020; Lange & Costley, 2020).

The Project-Based Learning model is a learning model recommended in the 21st century that is considered to be able to effectively improve student learning outcomes (Yusri et al., 2024). Some characteristics of the Project-Based Learning model: student-centered where students engage with real-world problems or questions to develop authentic products through various activities (Artama et al., 2023), allowing students to engage with real context in the learning process (Wardah et al., 2022), able to increase creativity, collaboration, critical thinking, communication, concept understanding, innovative thinking, motivation, problem-solving, and confidence (Canto et al., 2023). Overall, the Project-Based Learning model is recognized as effective in enhancing student-centered learning and improving learning outcomes at various levels of education.

Starting from the various advantages of the Project-Based Learning model that has been presented, the researcher will test the model in learning to write opinion article texts for vocational school students. The problem that is the focus of this research is whether the Project-Based Learning model is effective in improving the ability to write opinion article texts of vocational school students. The purpose of this study is to describe the effectiveness of the Project-Based Learning model in improving the ability to write opinion article texts in vocational school students.

Method

The research method used in this study is an experimental research method that aims to determine the influence of the Project-Based Learning model in improving students' ability to write opinion article texts. The research design used is Nonequivalent Control Group Design.

This design is almost the same as the pretest-posttest control group design, but in this design, the experimental group and the control group are not randomly selected. The pretest results are good if the experimental group values there is also a control group as a comparison class. However, the selection of groups is not chosen randomly or randomly. This research was carried out in four meetings, namely two times in the experimental class and twice in the control class. The research was conducted on students of SMK XII DKV which consisted of 20 students as an experimental class and XII AKL 20 students as a control class.

The data collection technique is carried out using a written test. The main data is a test consisting of a pretest (preliminary) and a posttest (final) for cognitive assessment. The test is used to determine students' ability to learn to write opinion article texts using the Project-Based Learning learning model. The test itself is carried out twice, namely the initial and final tests.

The research instrument used is through LKPD (Student Worksheet). Data analysis uses data processing techniques that are carried out to test the hypothesis formulated. The data collection technique carried out by the researcher is by using an experimental class, namely class XII DKV, and a control class, namely class XII AKL. The two classes were given different treatments, namely the experimental class applied a direct model and the control class was not treated.

This study obtained it from several quantitative data, namely the assessment of cognitive aspects obtained from the initial score (pretest) and final score (posttest). Data from the instrument in the form of a test is then processed using a statistical test, then the test results obtained from the experimental and control classes will be processed using the t-test formula (t-test) to see the ability quantitatively.

Steps in processing data using t-test. T-test is used to determine how much difference there is between the two data. The t-test is used to compare the initial test score and the final test score after being given treatment or to compare the experimental class with the control class, while the formula used is t-test sample related.

Results and Discussion

A. Research Results

This research was carried out for 3 weeks, starting from July 29 to August 12, 2024, at SMK Budi Tresna Muhammadiyah Cirebon. This study uses two classes, namely the experimental class and the control class. The experimental class applies the Project-Based Learning model,

while the control class applies the contextual learning model. This study was conducted to determine the effectiveness of the application of the Project-Based Learning Model in learning to write opinion article texts in class XII of SMK Budi Tresna Muhammadiyah Cirebon for the 2024/2025 school year. The research data is in the form of initial tests and final tests in learning to write opinion article texts. The following is a table of data on students' initial test scores.

Table 1. Data on the results of the initial test of the experimental class

Subject	Assessment Criteria			Value
	Topic	Fill	Structure	
1	4	1	2	70
2	4	1	2	70
3	4	1	2	70
4	4	2	2	80
5	4	2	2	80
6	4	1	2	70
7	4	1	2	70
8	4	1	2	70
9	4	2	2	80
10	4	0	2	60
11	4	0	2	60
12	4	1	1	60
13	4	1	2	70
14	4	1	2	70
15	4	2	2	80
16	4	1	2	70
17	4	1	2	70
18	4	1	2	70
19	4	1	2	70
20	4	2	2	80
Sum				1420
Average				71

The table 1, the results of the initial test in learning to write opinion article texts in grade XII DKV students obtained a total score of 1420 and an average of 71. The score in the initial test (pretest) of the students who obtained the highest score was 5 students with a score of 80, the students who obtained the lowest score were 3 students with a score of 60, and the average score obtained by the most students was a score of 70, which was 12 students. The data from this initial test was carried out to determine the initial ability of students before learning with the Project-Based Learning model assisted by audio-visual media. The results of the initial test in learning to write opinion article texts show that students in grade XII DKV in general have

not achieved completeness. This can be shown that 15 students have not reached the minimum completeness criteria and 5 students have reached the minimum completeness criteria. On this basis, it is necessary to make a breakthrough to improve student learning outcomes.

The following is the data on the final test results of the experimental class after learning through the Project-Based Learning model assisted by audio-visual media. The table 2, the results of the final test (posttest) in learning to write article texts for grade XII DKV students as an experimental class using the Project-Based Learning learning model and assisted by audio-visual media obtained a total score of 1790 and an average of 89.5. In detail, the scores in the final test were 6 students with a score of 100, the students who got the lowest score were 6 students with a score of 80, and the average score that most students obtained was 80, 90, and 100, which was 6 students. Thus, it can be seen that the results of the final test in learning to write opinion article texts in grade XII DKV students have reached the minimum completeness criteria. The learning to write opinion article texts in class XII DKV has undergone significant changes in scores from the initial test that has been carried out previously. Learning using the Project-Based Learning learning model and assisted by audio-visual media can be said to be effective.

Table 2. Data on the results of the final test of the experimental class

Subject	Assessment Criteria			Value
	Topic	Fill	Structure	
1	4	3	2	90
2	4	4	2	100
3	4	2	2	80
4	4	3	1,5	85
5	4	2	2	80
6	4	3	1,5	85
7	4	3	2	90
8	4	2	2	80
9	4	3	2	90
10	4	4	2	100
11	4	4	2	100
12	4	3	2	90
13	4	2	2	80
14	4	4	2	100
15	4	4	2	100
16	4	2	2	80
17	4	4	2	100
18	4	2	2	80
19	4	3	2	90
20	4	3	2	90
Sum				1790
Average				89,5

Susilo, Jimat et.al (The effectiveness of the project-based learning)

Furthermore, learning to write opinion article texts in students in the comparison or control class. Learning is carried out using a contextual model. The following is the data of the initial test results.

Table 3. Data of the Initial Test Results of the Control Class

Subject	Assessment Criteria			Value
	<i>Topic</i>	<i>Fill</i>	<i>Structure</i>	
1	4	1	2	70
2	4	0	1	50
3	4	0	1	50
4	4	1	0	50
5	4	1	1	60
6	4	0	1	50
7	4	0	2	60
8	4	1	2	70
9	4	1	2	70
10	4	0	1	50
11	4	2	1	70
12	4	1	2	70
13	4	0	1	50
14	4	1	2	70
15	4	0	2	60
16	4	1	2	70
17	4	1	2	70
18	4	0	2	60
19	4	1	2	70
20	4	0	1	50
Sum				1220
Average				61

The table 3, the results of the initial test in learning to write opinion article texts in grade XII AKL students as a control class using a contextual learning model of 1220 with an average score of 61. This initial test was conducted to determine students' abilities before learning with a contextual model as an experimental class partner. The results of the initial test are not much different from the initial abilities of the students of the experimental class. The details of the initial test results in the control class are the students who got the highest score as many as 9 students with a score of 70, the students who got the lowest score as many as 7 students with a score of 50, and the average score that the most students got was a score of 70, which was as many as 9 students. The results of the initial test in learning to write opinion article texts in grade XII AKL students as a control class showed that all students had not reached the minimum

completeness criteria. This needs to be learned to improve the ability to write opinion article texts. The following is the data on the final test results of the control class students through the contextual learning model.

Based on the table above, the final test results in learning to write article texts in grade XII AKL students as a control class amounted to 1340 and the average score was 67. The final test showed a change. The results of the final test scores of students were the highest scores of 3 students with scores of 80 and 75, the students who obtained the lowest scores were 3 students with a score of 50, and the average score obtained by most students was a score of 70, which was 11 students. Based on the description above, the results of the final test in learning to write opinion article texts in grade XII AKL students as an experimental class there are 17 students who have not reached the minimum completeness criteria and 3 students who have reached the minimum completeness criteria. So the learning of writing article texts in class XII AKL as a control class using the contextual learning model still needs to be improved, both from the learning media and the tools used.

Table 4. Control Class Final Test Result Data

Subject	Assessment Criteria			Value
	Topic	Fill	Structure	
1	4	2	1,5	65
2	4	2	1,5	65
3	4	1	2	70
4	4	2	1,5	75
5	4	1	2	70
6	4	1	2	70
7	4	0	2	60
8	4	1	2	70
9	4	1	2	70
10	4	1	0	50
11	4	0	1	50
12	4	1	0	50
13	4	1	2	70
14	4	1	2	70
15	4	2	2	80
16	4	2	1,5	75
17	4	1	2	70
18	4	1	2	70
19	4	1	2	70
20	4	1	2	70
Sum				1340
Average				67

Uji Hipotesis dengan Menggunakan Uji-t

The results of the research in the form of preliminary and final tests (posttest) in learning to write article texts using the Project-Based Learning model assisted by audiovisual media which was carried out in class XII DKV as an experimental class and in class XII AKL by using the Contextual learning model as a control class, then processed using statistical tests (t-test). The results of the t-test based on the results of the pretest and post-test are as follows.

X₁: Final grade of the experimental class → 1790

X₂: Final grade of the Control class → 1340

n: Number of students →

20X₁²: 161450

X₂²: 91100

Based on this data, it is then analyzed to determine the variant. The following is an analysis of the variants.

$$S_{X_1}^2 = \frac{\sqrt{n \sum X_1^2 - (\sum x_1)^2}}{n(n-1)}$$

$$S_{X_1}^2 = \frac{\sqrt{24900}}{380}$$

$$S_{X_1}^2 = \sqrt{6552}$$

$$S_{X_1}^2 = 8094$$

And here are the variants in the control class.

$$S_{X_2}^2 = \frac{\sqrt{n \sum X_2^2 - (\sum x_2)^2}}{n(n-1)}$$

$$S_{X_2}^2 = \frac{\sqrt{26400}}{380}$$

$$S_{X_2}^2 = \sqrt{6947}$$

$$= 8334$$

Uji Hipotesis

After calculating the variance, the author will present a hypothesis test to see if there is a significant difference in learning outcomes between students who apply the Project-Based

Learning model and those who do not apply the Project-Based Learning model. To test the difference between the two averages, the following steps are required.

$$t_{hitung} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2} \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}} \rightarrow t_{hitung} \frac{22,5}{\sqrt{8214(0,05)}}$$

$$t_{hitung} \frac{22,5}{\sqrt{4107}} \rightarrow t_{hitung} = 3,515$$

From the calculation of the value t_{count} above, it is known to be 3,515. Next researchers look for t_{table} and the degree of freedom (dk) of 38 with a significant level of 5%.

$$N = 40$$

$$K = 2$$

$$(\alpha) = 5\% = 0,05$$

$$df = n - k$$

$$df = 40 - 2 = 38$$

$$T_{table} = 1.687$$

Based on the value of dk the value of $t_{table} = 1.687$

As a result of the above data processing, it can be concluded that the value of t_{count} is greater than t_{table} , that is t_{count} 3,515 and t_{table} 1,687. In this study, the hypotheses used are the null hypothesis (H_0) and the working hypothesis (H_1). From the data that the author gets, the hypothesis that the researcher describes can be tested for correctness. The following are the hypotheses in this study.

1. If the experimental class (KE) > the control class (KK), H_0 is rejected and H_1 is accepted, then the Project-Based Learning learning model is declared effective.
2. If the experimental class (KE) < the control class (KK), H_0 is accepted and H_1 is rejected, the Project-Based Learning learning model is declared ineffective.

From the calculations described earlier, it is obtained t_{count} as 3,515 at a significant level of 5% and t_{table} 1,687. This shows that H_1 is accepted and H_0 is rejected. Thus, the Project-Based Learning learning model in learning to write article texts for grade XII students of SMK Budi Tresna Muhammadiyah Cirebon for the 2024/2025 school year is effective.

Student learning outcomes in learning to write opinion article texts, student learning outcomes are measured using an instrument, namely a written test in the form of LKPD. The use of instruments in the form of written tests aims to determine the effectiveness of the

Project-Based Learning learning model in learning article texts. The use of the project-based Learning Model in the experimental class is more effective than learning in the control class. This is based on student activities when participating in the learning activity process. Students in the experimental class have a high sense of enthusiasm during the learning process.

This affects students' writing ability so that students' writing becomes better. The effectiveness of the Project-Based Learning model is assisted by audio-visual media in learning to write article text. It is proven by the active response and student activities during the learning process. This affects the results of writing article text using Canva (infographic) students which is different from the results of writing student article text in the experimental class compared to the control class.

B. Discussion

The application of the Project-Based Learning model assisted by audio visual media can improve Grade XII students of SMK Budi Tresna Muhammadiyah Cirebon in writing opinion article texts on. This is by research conducted by Hasanah (2022) that the Project-Based Learning model can create a more conducive learning atmosphere, can enable students to learn collaboratively so that it has an impact on their learning outcomes.

Student learning outcomes in learning to write opinion article texts are measured using an instrument, namely a written test in the form of a student worksheet (LKPD). The use of instruments in the form of written tests aims to determine the effectiveness of the application of the Project-Based Learning learning model in learning to write opinion article texts. An easy-to-use measuring tool to determine the improvement of student learning outcomes is through tests, both in writing and orally (Susilo et al., 2021).

The use of the Project-Based Learning model in the experimental class is more effective than learning in the control class. This is based on student activities when participating in the learning activity process. Students in the experimental class have a high sense of enthusiasm during the learning process. This affects students' writing ability so that students' writing becomes better. All learning models have a good influence on the learning process. This happens in the application of the Project-Based Learning model. The learning model helps to awaken student activities by utilizing all five senses that they have. The learning process will also feel very fun because students are actively involved in the learning that takes place (Rasyad et al., 2017).

The effectiveness of the Project-Based Learning model in learning to write opinion article

texts can also be seen from the active responses of students during the learning process. This affects the results of writing student opinion article texts which are different from the results of writing student opinion article texts in the experimental class compared to the control class. Based on the data of the results obtained by students in the final test in the experimental class, which amounted to 1790 with an average score of 89.5. The results of the assessment have met the KKTP score. Meanwhile, students in the control class have different attitudes during learning. Students in the control class looked less enthusiastic during the learning process. This is because learning in the control class does not receive treatment. Students are only given sample article text by the teacher. The learning process in the control class also feels monotonous because there is no motivation like in the experimental class so students feel bored.

This affects the results of the opinion article text which has a smaller value than the experimental class, which is 1580 with an average score of 79. Seeing the effectiveness of the use of the Project-Based Learning learning model assisted by audiovisual media, it can be concluded that the Project-Based Learning learning model can be used as one of the models in learning to write opinion article texts. However, each learning model has its drawbacks. The weakness of the Project-Based Learning learning model is that it takes a lot of time to solve problems and produce products.

Based on the results of the test of learning to write opinion article texts, it can be seen that the difference from the t-test on the ability to write opinion article texts can be seen. The average score of the initial test and the final test when learning to write opinion article text in the experimental class was better than that of the control class. This is evident from the average score of the final test of the two classes. Class XII DKV as an experimental class that uses the Project-Based Learning learning model in learning to write opinion article texts obtained an average score of 89.5 while class XII AKL as a control class that uses a contextual learning model in learning to write opinion article texts obtained an average score of 79. This is because the application of the Project-Based Learning model in learning to write opinion article texts provides more motivation for students to be creative, think critically, and be active in participating in learning. Especially in learning to write opinion article texts.

In addition, the results of the t-test calculation also proved that the t_{count} was 3.515 at a significant level of 5% and the t_{table} was 1.687. Thus, the t_{count} is greater than the t_{table} , which is $3,515 > 1,687$. This indicates that the null hypothesis (H_0) is rejected, and the work (H_1) is accepted. In other words, the application of the Project-Based Learning model in

learning to write opinion article texts in Grade XII students of SMK Budi Tresna Muhammadiyah Cirebon for the 2024/2025 school year is effective.

Conclusion

Based on the results of the research that has been carried out, it is proven that the Project-Based Learning model assisted by audio-visual media can increase student motivation and learning outcomes. This learning model can create a more conducive learning atmosphere, open opportunities for students to learn collaboratively, and train students to learn independently. The impact of the implementation of the audio-visual assisted Project-Based Learning learning model, namely the learning outcomes of students writing opinion article texts has increased. This can be seen from the calculation of data analysis through t-count statistics of 3.515 at a significant level of 5% and t-table of 1.687. These results show that H1 is accepted and H0 is rejected. Thus, the application of the Project-Based Learning Model in learning to write opinion article texts in grade XII students of SMK Budi Tresna Muhammadiyah Cirebon is effective.

Student activities in learning by using the Project-Based Learning Model in learning to write opinion article texts have been very good. This is because students have carried out their obligations as students such as doing assignments and so on. Thus, it can be concluded that learning to write opinion article texts through the Project-Based Learning model can improve student learning outcomes. In general, the average result of writing opinion article text is very satisfactory. Students have been able to write opinion article texts well.

Declarations

- Author contribution** : Jimat Susilo oversees the entire research project. He also led the writing of the script and collaborated with the second and third writers. Reni Anggraini participates in data collection, transcription, and analysis. Suherli Kusmana revised the manuscript. The three authors agreed to the script until the end.
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- Conflict of interest** : The three authors state that they have no competitive interest.

Ethics Approval

Information on Ethics Approval and informed consent statements are required for all articles published in BAHASTRA since 2024.

Additional information

No additional information is available for this paper.

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