

USING POP-UP BOOK IN E-LEARNING TO IMPROVE STUDENTS VOCABULARY MASTERY STUDENT

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Abstract: This research aims to test the effectiveness of using Pop-Up Books to increase students' vocabulary. Pop-Up Book is implemented for students in E-learning using YouTube videos. This research uses a quasi-experiment design with non-equivalent control groups. By conducting tests on two groups, this research design combines pre-test, treatment, and post-test research. The author uses a test for students created to measure student achievement in increasing vocabulary using Pop Up. Test to determine the difference in students' vocabulary mastery between the experimental group and the control group after the learning process using Pop-Up Books or without using Pop-Up Books. The population in this study were class VII students at MTs PSM Randublatung Blora for the 2021/2022 academic year. Two classes of class VII students at MTs PSM Randublatung, Blora, were used as samples. The control group is the first class, while the experimental group is the second class. Class VII C is the control group, while VII D is the experimental group. The results of this research indicate that the use of Pop-Up Books to increase students' vocabulary is effective. The test results show that the average score is 86.44, which is in the good range. With a rate of 59.03%, the use of Pop-Up Books as learning media is quite effective.

Keywords: Pop-up book; e-learning; vocabulary

Abstrak: Penelitian ini bertujuan untuk menguji efektifitas penggunaan Pop-Up Book untuk meningkatkan kosakata siswa. Pop-Up Book diimplementasikan kepada siswa dalam E-learning menggunakan video Youtube. Penelitian ini menggunakan desain quasi-experiment dengan non-equivalent control groups. Dengan melakukan tes pada dua kelompok, desain penelitian ini menggabungkan penelitian pre-test, treatment, dan post-test. Penulis menggunakan tes untuk siswa yang dibuat untuk mengukur prestasi siswa dalam meningkatkan kosakata menggunakan Pop Up. Tes untuk mengetahui perbedaan penguasaan kosakata siswa antara kelompok eksperimen dan kelompok kontrol setelah proses pembelajaran menggunakan Pop-Up Book atau tanpa menggunakan Pop-Up Book. Populasi dalam penelitian ini adalah siswa kelas VII MTs PSM Randublatung Blora Tahun Pelajaran 2021/2022. Dua kelas siswa kelas VII MTs PSM Randublatung, Blora dijadikan sampel. Kelompok kontrol adalah kelas pertama, sedangkan kelompok eksperimen adalah

kelas kedua. Kelas VII C sebagai kelompok kontrol, sedangkan VII D sebagai kelompok eksperimen. Hasil penelitian ini menunjukkan bahwa penggunaan Pop-Up Book untuk meningkatkan kosakata siswa efektif. Hasil tes menunjukkan bahwa skor rata-rata adalah 86,44 yang berada pada rentang baik. Dengan tingkat 59,03%, penggunaan Pop-Up Book sebagai media pembelajaran cukup efektif.

Kata Kunci: Buku pop-up; E-learning; Kosakata

INTRODUCTION

The terms "second language" and "foreign language" refer to the sense in which these languages are spoken or studied.¹² For example, English is an official language in Australia, England, and the United States, while English is a second language for immigrants.³ In contrast, English is only taught in the classroom in Indonesia, so it is recognized as a foreign language. English lessons include an important subject in a student's subject list.⁴⁵

It's not an all-or-nothing issue whenever it comes to vocabulary knowledge; it's not a case of knowing a word or not knowing a word.⁶ Learning English vocabulary is very important when we want to be fluent in speaking English.⁷⁸ The government continues to implement various reforms in the field of education in Indonesia in order to improve the country's standard of education.⁹ In the learning process, media has a place and is valuable.¹⁰ The purpose of the media is to make the information delivered

¹ Jack Richards, "Error Analysis and Second Language Strategies,." 1971.

² J C Bertin, P Grav□, and J P Nancy-Combes, *Second Language Distance Learning and Teaching: Theoretical Perspectives and Didactic Ergonomics: Theoretical Perspectives and Didactic Ergonomics*, IGI Global Research Collection (Information Science Reference, 2010), <https://books.google.co.id/books?id=-F4e-yGX5h4C>.

³ Richards, "Error Analysis and Second Language Strategies."

⁴ R Ellis, W R Lee, and H G Widdowson, *Second Language Acquisition*, E.L.T. Selections: Articles from the Journal English Language Teaching (OUP Oxford, 1997), <https://books.google.co.id/books?id=Wwdb7P0CG5AC>.

⁵ Ivana Simonova, "Learning English Grammar in the Smart Learning Environment," in *Smart Education and E-Learning 2018 5* (Springer, 2019), 142–50, https://doi.org/10.1007/978-3-319-92363-5_13.

⁶ Scott Thornbury, "Training in Instructional Conversation," *Language in Language Teacher Education* 4 (2002): 95–106.

⁷ S D Krashen and Pergamon Institute of English (Oxford), *Second Language Acquisition and Second Language Learning*, Language Teaching Methodology Series (Oxford University Press, 1981), <https://books.google.co.id/books?id=prFoAAAAIAAJ>.

⁸ Xi Chen et al., "Comparing Vocabulary Development in Spanish- and Chinese-Speaking ELLs: The Effects of Metalinguistic and Sociocultural Factors," *Reading and Writing* 25, no. 8 (September 5, 2012): 1991–2020, <https://doi.org/10.1007/s11145-011-9318-7>.

⁹ H A Nugroho and I Ishartiwi, "Analisis Perbedaan Pada Kurikulum KTSP Dan Kurikulum 2013 terhadap Penyesuaian Alokasi Waktu Perminggu Untuk SDLB. PEMBELAJAR: Jurnal Ilmu Pendidikan, Keguruan, Dan Pembelajaran, 3 (1), 19–23," 2019.

¹⁰ Imam Tabroni et al., "Utilization of the Discovery Learning Model to Overcome Islamic Cultural History Learning Problems in Madrasa," *Indonesian Journal of Islamic Education Studies (IJIES)* 5, no. 1 (July 31, 2022): 81–94, <https://doi.org/10.33367/ijies.v5i1.2409>.

more understandable.¹¹ The media serves as a source of questions and learning media for students, as well as a motivation for their learning.¹² The purpose of using media is to equalize perception, clarify linguistic instructions, promote readiness to learn, overcome location, time, and sensory barriers, and allow students to learn independently.¹³ Media was created by drafting a collection of learning materials that were collected sequentially based on the indicators and searching for pictures, themes, and basic colors of the developed pop-up book.¹⁴ Pop-up books are one form of media. A pop-up book is a book with the ability to move and connect thanks to paper mechanisms such as folds, scrolls, slides, tabs, and wheels.¹⁵ The usage of pop-up book media can help in the delivery of information while also increasing students' curiosity and desire to participate in learning. A pop-up book can be used independently at school or at home.^{16,17} Pop-up or movable books are three-dimensional and contain paper pieces that pop up or move when the book is opened and fold completely flat when the book is closed.¹⁸

Pop-up books, also known as movable books, are a form of media that use paper mechanisms such as folds, scrolls, slides, tabs, and wheels to create three-dimensional

¹¹ Ratih Purwasih, Rahimullaily Rahimullaily, and Ade Irma Suryani, "Blended Learning Model in Improving 4C Abilities of Information System Students," *JPI (Jurnal Pendidikan Indonesia)* 10, no. 4 (2021), <https://doi.org/10.23887/jpi-undiksha.v10i4.30939>.

¹² Muhammad Fauzi and Moh. Samsul Arifin, "Teknologi Informasi Dan Komunikasi (TIK) Dalam Pendidikan Islam," *Al-Ibrah : Jurnal Pendidikan Dan Keilmuan Islam* 8, no. 1 (June 30, 2023): 19–33, <https://doi.org/10.61815/alibrah.v8i1.217>.

¹³ Zahara Mustika, "Urgenitas Media Dalam Mendukung Proses Pembelajaran Yang Kondusif," *CIRCUIT: Jurnal Ilmiah Pendidikan Teknik Elektro* 1, no. 1 (September 2, 2015), <https://doi.org/10.22373/crc.v1i1.311>.

¹⁴ Sri Adelila Sari, "The Development of Pop-up Book on the Role of Buffer in the Living Body," *European Journal of Social Sciences Education and Research* 4, no. 4 (2017): 213–21.

¹⁵ Muriel Garreta-Domingo et al., "Design for Collective Intelligence: Pop-up Communities in MOOCs," *AI & SOCIETY* 33, no. 1 (February 17, 2018): 91–100, <https://doi.org/10.1007/s00146-017-0745-0>.

¹⁶ Elisa Diah Masturah, Luh Putu Putrini Mahadewi, and Alexander Hamonangan Simamora, "Pengembangan Media Pembelajaran Pop-up Book Pada Mata Pelajaran IPA Kelas III Sekolah Dasar," *Jurnal EDUTECH Undiksha* 6, no. 2 (2018): 212–21, <https://doi.org/https://doi.org/10.23887/jeu.v6i2.20294>.

¹⁷ Febrianty, Hendra Hadiwijaya, and D Tri Octafian, "System Development Management E-School as a Students Information Media," *Journal of Physics: Conference Series* 1783, no. 1 (2021): 12026, <https://doi.org/10.1088/1742-6596/1783/1/012026>.

¹⁸ Melissa P Johnston, "Secondary Data Analysis: A Method of Which the Time Has Come," *Qualitative and Quantitative Methods in Libraries* 3, no. 3 (2014): 619–26.

effects when the book is opened.¹⁹ These mechanisms allow the book to move and connect, making it an interactive and engaging medium for delivering information. Pop-up books are designed to promote curiosity and participation in learning, and they can be used both at school and at home.²⁰ The history of pop-up books dates back to the 15th century, with the first known example being a book of hours by Jean Daurat, a French printer, in 1490.²¹ However, the modern pop-up book was invented by Robert A. Lentz in 1963, who patented the technique of creating three-dimensional figures that appear to pop up from the page.²² Pop-up books are often used in education, particularly in early childhood education, as they help children develop fine motor skills, visual perception, and spatial awareness.²³ They also encourage a love of reading and can be used to teach a variety of subjects, such as science, history, and literature. While pop-up books are typically associated with children's literature, there are also adult pop-up books that are designed for a more mature audience. These books often have more complex and intricate mechanisms, and they can be used to create art installations or as decorative objects.²⁴ In summary, pop-up books are a unique and engaging form of media that can be used to deliver information and promote learning in a fun and interactive way. They are suitable for both children and adults and can be enjoyed independently or in a group setting.

RESULTS AND DISCUSSION

The writer seeks to know if employing a Pop-Up Book to improve students' vocabulary mastery is beneficial. The subjects in this research are VII grade students

¹⁹ Séverine Erhel and Eric Jamet, "Using Pop-up Windows to Improve Multimedia Learning," *Journal of Computer Assisted Learning* 22, no. 2 (April 6, 2006): 137–47, <https://doi.org/10.1111/j.1365-2729.2006.00165.x>.

²⁰ Marjolein E Haagsman et al., "Pop-up Questions Within Educational Videos: Effects on Students' Learning," *Journal of Science Education and Technology* 29, no. 6 (December 7, 2020): 713–24, <https://doi.org/10.1007/s10956-020-09847-3>.

²¹ Maczynska and Feilla, "Pop! Taking Learning Beyond the Classroom through Multimodal Pop-Up Events," *Transformations: The Journal of Inclusive Scholarship and Pedagogy* 30, no. 1 (2020): 35, <https://doi.org/10.5325/trajincschped.30.1.0035>.

²² John P Whitney et al., "Pop-up Book MEMS," *Journal of Micromechanics and Microengineering* 21, no. 11 (2011): 115021.

²³ Mahmudah Mahmudah, Maragustam Siregar, and Wahyu Hanafi Putra, "Modernization of Islam and Language Education in the Society 5.0 Era in the Perspective of Harun Nasution," *Scaffolding: Jurnal Pendidikan Islam Dan Multikulturalisme* 5, no. 3 (August 23, 2023): 30–43, <https://doi.org/10.37680/scaffolding.v5i3.3455>.

²⁴ Masturah, Mahadewi, and Simamora, "Pengembangan Media Pembelajaran Pop-up Book Pada Mata Pelajaran IPA Kelas III Sekolah Dasar."

at MTs PSM Randublatung, Blora, in the academic year 2021/2022, with 36 students from VII C participating as the control class and 36 students from VII D participating as the experimental class.

Before students were taught with and without the learning material of Pop-Up Book, a pre-test was given in each class during the first meeting. There were 25 multiple-choice questions in the pre-test. The goal of this test is to compare students' vocabulary mastery before and after learning to use a Pop-Up Book. The pre-test results suggest that the students' mean score falls below the minimum standard. Table 1 shows the mean score of the pre-tests.

1.1 Descriptive statistical test

A descriptive statistical test is used to find the mean of each group, the standard deviation, and the percentage of students' vocabulary mastery. Following that, the writer entered the results of the students' exams into Microsoft Excel and SPSS.

Table. 1 Descriptive Statistic of Pre-Test Control Group and Experiment Group

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Control	36	32	89	59,11	15,917
Pre-test	36	44	96	70,61	11,864
Experiment					
Valid N (listwise)	36				

Pre-test scores are interpreted according to the table on the following categories to identify the level of students' achievement. Score 90-100 belongs to excellent (A) category, 80-89 belongs to good (B) category, 70-79 belongs to adequate (C) category, 60-69 belongs to unsatisfactory (D) category, and 0-60 belongs to unacceptable (E) category. The mean score of the control group, as shown in the table above, is 59,11, which is unacceptable. The experimental group's mean score is 70,61, which is considered adequate.

At the second meeting, the writer provided treatment to both the experiment and control groups. The students in the control group were given the treatment of identifying the meaning of the word using the previous method that looks at YouTube video without using Pop-Up Book and then looking it up in the dictionary.

In the experiment class, the writer treats students by teaching students in YouTube video using Pop-Up Book as a learning media. Students should identify the word in Pop-Up Book which have explained by the writer in a YouTube video. After the pre-test and treatment, each class received a post-test.

The post-test consists of 25 multiple-choice questions. The purpose of this test is to compare students' vocabulary mastery after being taught with and without Pop-Up Book as the media. The purpose of the post-test is to compare the student's pre-test and post-test results. Whether the student result continues the same, improves, or decreases. Table 2 shows the mean score of the post-test.

Table.2 Descriptive Statistic of Post-test Control Group and Experimental Group

	N	Minimum	Maximum	Mean	Std. Deviation
Post-test Control	36	52	92	75,89	12,375
Post-test Experiment	36	60	100	86,44	9,670
Valid N (listwise)	36				

Post-test scores are interpreted according to the table on the following categories to identify the level of students' achievement. Score 90-100 belongs to excellent (A) category, 80-89 belongs to good (B) category, 70-79 belongs to adequate (C) category, 60-69 belongs to unsatisfactory (D) category, and 0-60 belongs to unacceptable (E) category. The mean score of the control group, as shown in the table above, is 75,89 , which is adequate. The experimental group mean score is 86,44 which is considered good. The post-test result shows us that the vocabulary mastery from experimental group after taught by using Pop-Up Book as learning media is increasing to good category. Then, the mean score of control group also increases in adequate category.

2.1 Normality Test

The writer observes the normality test after analyzing the descriptive statistic. The normality test is showed to see if the data from each variable has a normal distribution or nor. The normality test was calculated in this study using the normality test Kolmogorov-Smirnov data, which was calculated using SPSS for windows release 16. The normality test Kolmogorov-Smirnov is based on tye following criteria: (a) The data is normally distributed if the significant value (sig) is $> 0,05$. (b) The data is not

normally distributed if the significant value (sig) is $< 0,05$. The result of normality test can be seen in table.3.

Table 3. Normality Test

	Class	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Result of the study	Pre-Test Experiment	,128	36	,144	,984	36	,858
	Post Test Experiment	,116	36	,200*	,948	36	,088
	Pre-Test Control	,100	36	,200*	,960	36	,213
	Post Test Control	,142	36	,062	,921	36	,013

According to the table above, the Kolmogorov - Smirnov normality test reveal that the significant value (sig) in the pre-test Experiment class is 0,144, indicating that it is $> 0,05$. The significant value (sig) in the post-test experiment class is 0,200*, indicating that it is $> 0,05$. In the pre-test control class, the significant value (sig) is 0,200*, which means it is $> 0,05$. The significant value (sig) in the post-test control class is 0,062, indicating that it is $> 0,05$. The data is normally distributed, based on the information above.

3.1 Homogeneity Test

The writer use the variance of homogeneity test to determine the t-test formula. A homogeneity test is conducted to see if the variability in a group of people is the same.²⁵

Table 4. Test of Homogeneity of Variance.

Test of Homogeneity of Variance				
	Levene Statistic	df1	df2	Sig.
Based on Mean	2,418	1	70	,124

²⁵ Usmadi Usmadi, Hayatul Hasanah, and Ergusni Ergusni, "The Impact of the Implementation of Three-Step Interview Cooperative Learning Model in Mathematics Learning toward the Learners' Activities and Outcomes," *Malikussaleh Journal of Mathematics Learning* 3, no. 1 (2020): 8-12.

Result of the study	Based on Median	2,397	1	70	,126
	Based on Median and with adjusted df	2,397	1	67.948	,126
	Based on trimmed mean	2,430	1	70	,124

The significant value (sig) based on mean is shown in the table above as the base of decision making in the homogeneity test. The significant value (sig) based on the mean is 0,124, which means it is > 0.05 , as seen in the table above. The significant value (sig) based on the mean is described in the table above as the basis for decision making in the homogeneity test. The data's conclusion is homogenous.

4.1 Hypothesis Test

Hypothesis testing is important in research to demonstrate the validity of hypotheses that have been previously formulated. To test this hypothesis, the writer used the independent sample t test with SPSS 26. In a hypothesis test, the following criteria are used to make decisions:

- a. The H_0 is rejected and the H_a is accepted if the significant value (2-tailed) is $< 0,05$.
- b. The H_0 is accepted and the H_a is rejected if the significant value (2-tailed) $> 0,05$.

Where:

H_0 : There is no significant difference in vocabulary proficiency between students who are taught using "Pop-Up Book" as the media and students who are not using "Pop-Up Book" as the media.

H_a : There is significant difference in vocabulary proficiency between students who are taught using "Pop-Up Book" as the media and students who are not using "Pop-Up Book" as the media.

Because sig (2-tailed) is $0,000 < 0.05$, the H_0 is rejected and the H_a is approved. So, it means that there is a significant difference in vocabulary mastery between students who are taught with "Pop-Up Book" and students who are taught without it.

5.1 Normalized Gain (N - Gain Score)

Normalized gain (N - gain score) is a test which determines the effectiveness of a certain media or treatment in a study. If there is a significant difference between the average score of the post-tests experiment class and the post-tests control class, the

N - gain score is employed. Therefore, the effectiveness of Pop-Up Book as teaching media was calculated using N-Gain Score. The formula which is used is as follow:

$$N \text{ Gain} = \frac{\text{Posttest score} - \text{Pretest score}}{\text{Ideal Score} - \text{Posttest score}}$$

Where: Ideal score = 100

After getting the N gain score, the writer categorized into some criterion.

Table 4. N Gain score achievement.²⁶

Percentage (%)	Grade
< 40	Ineffective
40 - 55	Less Effective
56 - 75	Quite effective
> 76	Effective

The result of using Pop-Up Book calculated using N-Gain is quite effective with percentage 59,03%. Then, the use of previous method also calculated using N-Gain Score and the result is less effective with percentage 42,90%. It means, Pop-Up Book can be effective teaching media to improve student' vocabulary mastery. The N-Gain score is a measure used in the field of educational technology to assess the effectiveness of various teaching methods. It is a metric that helps educators determine the impact of different teaching methods on student learning outcomes. In the context of your question, the N-Gain score of 59.03% for the Pop-Up Book method indicates that it is quite effective in improving student vocabulary mastery. This means that students who learn using Pop-Up Books are likely to have a higher level of vocabulary mastery compared to those who learn using other methods. On the other hand, the N-Gain score of 42.90% for the previous method suggests that it is less effective in improving student vocabulary mastery. This implies that the Pop-Up Book method is a better choice for teaching vocabulary compared to the previous method.²⁷ In summary, the N-Gain scores provide evidence that Pop-Up Books can be an effective teaching media for improving student vocabulary mastery. The higher score for the Pop-Up Book method indicates that it has a greater positive impact on student learning outcomes compared to the previous method.

²⁶ Richard R Hake, "Towards Paradigm Peace in Physics Education Research.," 2000.

²⁷ Kangdon Lee, "Augmented Reality in Education and Training," *TechTrends* 56, no. 2 (January 2012): 13-21, <https://doi.org/10.1007/S11528-012-0559-3>.

CONCLUSION

According to the data which have been analyzed in precious chapter, the writer made conclusions as follow : The vocabulary mastery of students in the control class who were not taught using Pop-Up Book as the media in pre test got a result that unsatisfactory with mean 59,11% and in the post-test got a result that good with mean 75,89%. The vocabulary mastery of students in the experimental class who were taught using Pop-Up Book as the media in pre test got a result that unsatisfactory with mean 70, 61% and in the post-test got a result that good with mean 86, 44%. There is a significant difference in students' vocabulary mastery between who were taught without using "Pop-Up Book" and who were taught using "Pop-Up Book". As can be observed, the sig (2-tailed) value is ,000 with a degree of confidence of 95% , therefore $Sign > 0,05$, indicating that H_0 was rejected and H_a was approved. Students who were taught with Pop-Up Book scored higher than students who were taught without Pop-Up Book. It concluded that there is a significant difference in vocabulary mastery between students who were taught using Pop-Up Book and those who were not. Therefore, The effectiveness of Pop-Up Book as teaching media was calculated using N-Gain Score and the result is quite effective with percentage 59,03%. Then, the use of previous method also calculated using N-Gain Score and the result is less effective with percentage 42,90%. It means, Pop-Up Book can be effective teaching media to improve student' vocabulary mastery. The writer suggest that the teachers should use technology during the learning process, according to the writer. The Pop-Up Book is an engaging learning tool for learning English vocabulary. Due to the quick and all-encompassing evolution of the times, teachers and students must be innovative in order to create an engaging learning environment.

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