TED Talks Effect on Tenth Grade Students' Vocabulary Mastery at SMAS GKPI Padang Bulan

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Keywords: multimedia learning; TED talks application; tenthgrade students; vocabulary mastery **Abstract.** The TED Talks Application is an application that features talks on Technology, Education, Design, and various other topics, delivered by experts and professionals from around the world. This study aims to determine whether the TED Talks Application affects students' vocabulary mastery. This research used an experimental quantitative method involving two classes of tenth-grade students at SMAS GKPI Padang Bulan, Indonesia. Using a purposive sampling technique, the sample consisted of 26 students in the experimental group and 26 students in the control group. Both groups received pre-tests and post-tests to measure vocabulary improvement. The average pre-test score in the experimental group was 40.76, while the posttest average was 57.76. The control group's pre-test average was 40.38, and the post-test average was 50. Statistical analysis showed Ha was accepted and Ho was rejected, with a t-count of 2.677 greater than the t-table of 2.010. These results indicate that the TED Talks Application has a positive effect on students' vocabulary mastery, although the effect size was relatively small. The findings suggest that while TED Talks are not ideal as the primary vocabulary tool, they remain useful as a supplementary resource. Further research is recommended to explore additional multimedia tools that may better enhance vocabulary learning outcomes.

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INTRODUCTION

Vocabulary is a fundamental aspect of acquiring a language. Understanding and mastery of vocabulary allows students to communicate effectively in oral and written form. Harmer compared language to a body, where grammar forms the skeleton and vocabulary serves as the flesh that shapes and gives meaning to the whole. It means the importance of vocabulary in enabling meaningful communication. Without a rich vocabulary, people may

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struggle to convey their thoughts, emotions, and intentions clearly, even if they have a good grasp of grammatical rules. As supported by Dakhi (2019), vocabulary is more important than grammar. Mastery of grammar will be in vain if someone does not have a sufficient vocabulary and a good understanding of its meaning. This is because vocabulary acts as the key to unlocking comprehension and expression, allowing learners to engage more effectively in both spoken and written communication. Also, Tampubolon et al. (2023) said vocabulary, alongside grammar and pronunciation, is essential in learning English. Even when mastering grammar, people still need vocabulary to use it correctly. Therefore, vocabulary is something that everyone, especially students, should master. Students cannot develop English language skills without mastering vocabulary.

However, many students in Indonesia continue to face severe difficulties in mastering English vocabulary. There is a perception among some individuals that using English excessively may reduce national identity, which may discourage its everyday use (Manurung et al., 2019). English is a foreign language and is not widely used in daily conversations. In addition, Reskiawan et al. (2020) noted that students often struggle with English vocabulary due to issues such as the mismatch between spelling and pronunciation, the lack of accessible vocabulary sources, and the challenges of learning words that carry different meanings depending on context. For example, vocabularies such as "light," "rock," or "book" can have multiple interpretations based on how and where they are used.

These challenges were also observed at SMAS GKPI Padang Bulan. An interview conducted by the researcher with the English teacher revealed that vocabulary mastery among tenth-grade students was low, affecting their ability to understand and respond to classroom materials. The teacher emphasized that students who learn English as a foreign language are like babies learning a language — they need to master words before developing other language skills such as reading, writing, listening, and speaking. Classroom observation also identified several contributing factors to this issue. First, the teaching method used in the classroom was monotonous without interactive media. Second, the complexity of vocabulary meanings often confused students, and third, many students lacked motivation because English felt foreign and disconnected from their daily lives. These factors highlight the need for a more engaging, relevant, and student-centered approach to vocabulary learning.

Based on the view of Nasrullah & Aini (2024), teaching and learning techniques can influence students' dissatisfaction with vocabulary. This means that students need a different way of learning from that usually taught in a monotone. Then, students often quickly forget new vocabulary due to ineffective teaching strategies. Not all students who experience learning difficulties have low intelligence. However, they face obstacles in understanding material, maintaining concentration, and remembering information effectively. As explained Sinaga et al. (2023), students with learning difficulties have the same level of intelligence as other students, but they face challenges in the learning process, such as understanding, concentration, and memory. Therefore, students learning English as a foreign language need effective learning to help them master vocabulary.

Technology integration into language education has gained increasing attention in response to these challenges. Merliana et al. (2019) mentioned that technology is a tool that can be used in learning English, making it easier for students to enhance their vocabulary

understanding. Technology simplifies the process of vocabulary acquisition by providing access to engaging and authentic materials. According to Sitinjak et al. (2022) incorporating technology into classroom instruction can increase students' motivation and engagement, enhancing their learning outcomes. Multimedia tools offer students diverse ways to interact with content, including visual, audio, and textual formats, which help maintain their attention and deepen understanding. (Gilakjani, 2012) supports this by explaining that multimedia, through the combination of text, graphics, audio, and video, creates a richer learning experience and makes language input more comprehensible.

One multimedia tool that aligns with these benefits is the TED Talks Application. TED (Technology, Entertainment, Design) Talks feature captivating presentations, covering a wide range of topics including science, motivation, and personal development. Taibi et al. (2015) reported that the application provides subtitles and transcripts in multiple languages, making it easier for English language learners to understand vocabulary in context. This helps learners connect vocabulary with its pronunciation and meaning more effectively. It also supports comprehension by allowing learners to follow spoken content with visual text. Based on the view of Hadi et al. (2021), TED Talks is a practical and accessible tool to enhance students' vocabulary knowledge, listening skills, and pronunciation. The variety of speakers and speech topics also exposes students to different accents and speaking styles, helping them internalize vocabulary used in real-life communication. According to Alfia (2022), the application offers several valuable features, such as search and filter options, allowing users to select videos based on their interests and needs. It also provides topics related to culture, education, and more, as well as a podcast feature that is very useful for students who do not have time to watch videos. Additionally, it offers free video and podcast downloads, which can benefit students with limited internet access.

This research used TED Talks is also grounded in Mayer's (2021) Cognitive Theory of Multimedia Learning (CTML). Mayer (2017, 2024) suggests that students learn more effectively when information is presented through both verbal (spoken or written words) and visual (images, animations, and videos) channels. Two relevant principles from twelve principles of CTML were applied in this research: the Multimedia Principle, which emphasizes learning through a combination of images and text or audio, and the Personalization and Voice Principle, which suggests that students learn better when the content is delivered in a friendly, conversational tone using a natural human voice. These principles support the use of TED Talks, as the application naturally integrates audio, video, and subtitles in a personalized format.

In line with the focus of this research, Harmer (2008) states that words can be categorized according to their functions, which are referred to as parts of speech. For this research, the researcher only focused on verbs and adjectives. These two categories were chosen because they frequently appear in both spoken and written texts, and they play a vital role in expressing actions, feelings, and descriptions—elements that are essential for meaningful communication. Harmer (2008) adds several key aspects of vocabulary that students need to learn to improve their mastery, such as understanding word meanings, expanding word usage, combining words, and learning word grammar. This research focused on word meanings, with a special emphasis on denotation, antonym, and synonym.

These three components were chosen because they are fundamental in helping students recognise not only the literal meaning of words but also their relationships and contrasts, which are crucial for building deeper comprehension and accurate language use.

Several previous studies have shown that TED Talks can positively influence vocabulary learning. For instance, Rahmawati et al. (2020) found that students were more engaged and gained new vocabulary through TED Talks, but the study was conducted in a religious-based Islamic senior high school and focused on students' perceptions rather than measuring direct improvement. Meanwhile, Falih (2019) conducted a study at a vocational high school and demonstrated that TED Talks improved students' vocabulary, but the vocabulary focus remained general and not classified by type or usage. Another study was conducted by Prakoso and Yanto (2024) at SMAN 5 Karawang, where TED Talks was used as a supporting medium in implementing the Vocabulary Self-Collected Strategy (VSS), and showed positive outcomes in vocabulary development. However, the study focused on general vocabulary and relied on indirect data such as observation, vocabulary journals, and interviews. In contrast, the present study was conducted at a private senior high school (SMAS GKPI Padang Bulan) and differs in its specific focus on verbs and adjectives, particularly denotation, synonym, and antonym meanings. Therefore, this study aims to investigate whether the use of TED Talks Application positively affects students' vocabulary mastery, and the findings aim to guide English teachers in applying multimedia resources more effectively to improve students' vocabulary mastery.

METHODS

This research used an Experimental Quantitative method. According to Arikunto (2023), experimental research investigates cause-and-effect relationships by manipulating one variable to observe its effect on another. In this research, the independent variable was the TED Talks Application, and the dependent variable was students' vocabulary mastery. The research was conducted at SMAS GKPI Padang Bulan during the academic year 2024/2025. The population included three classes of tenth-grade students: X-1, X-2, and X-3. However, only two classes were selected as the sample using purposive sampling technique. This technique was used by considering factors such as time, effort, and budget constraints and ensuring that the selected subjects have characteristics that best represent the population (Arikunto, 2023). Additionally, the technique was chosen because the school had already formed the classes, so the researcher could not randomly assign students individually. Based on initial observations, Class X-3 was selected as the experimental group and Class X-1 as the control group, as both had similar levels of vocabulary mastery and access to technology, allowing for a fair comparison. Class X-2 was excluded because many students in that class already had a higher level of vocabulary mastery, which could have affected the validity of the results. In the experimental group (X-3), students learned vocabulary using the TED Talks Application. The videos were then selected, played, and watched multiple times while noting new words. The author explained the content and guided a discussion about the vocabulary. Students then created sentences, summarized the video content using the vocabulary they had learned, and presented their summaries to the class. In contrast, the control group (X-1) learned vocabulary through traditional methods. Students used

dictionaries to find the meanings of new words in their textbooks and memorized them without multimedia tools. A vocabulary test was used as the research instrument to measure vocabulary improvement. The test consisted of 50 questions: 30 multiple-choice, 10 matching words, and 10 fill-in-the-blank questions. Each question was worth 2 points and was administered twice, as a pre-test (before the learning process) and as a post-test (after the learning process). Finally, the collected data from both groups were analyzed using an independent t-test, and the results were compared with the critical value from the t-distribution table to determine the statistical significance of the findings.

FINDINGS

This section presents and discusses the vocabulary test results administered to the experimental and control groups. The data were obtained through pre-tests and post-tests to measure the effect of using the TED Talks Application on students' vocabulary mastery. The following tables summarise the students' scores before and after the treatment.

Table 1 shows the pre-test and post-test scores of the experimental group taught using the TED Talks Application, including the score differences and their squares for statistical analysis.

				D 100 C	
No	Students' Initial Names	Pre-Test (X1)	Post-Test (X2)	Difference Score (d=X2-X1)	Square of Difference Score (d2)
1	AS	46	62	16	256
2	AM	28	40	12	144
3	CSS	34	56	22	484
4	CNH	60	88	28	784
5	СМ	42	54	12	144
6	CS	38	54	16	256
7	CTZ	34	42	8	64
8	CS	30	30	0	0
9	DK	32	30	-2	4
10	EM	36	62	26	676
11	GDN	46	70	24	576
12	GML	48	74	26	676
13	IL	56	66	10	100
14	JC	48	62	14	196
15	JAH	40	62	22	484
16	MVS	30	46	16	256
17	MS	44	74	30	900
18	NS	32	50	18	324
19	RMS	48	68	20	400
20	RIS	52	76	24	576
21	RZ	54	80	26	676
22	RAP	34	48	14	196
23	SRS	50	68	18	324
24	TP	28	34	6	36

Table 1. The Calculation of Pre-Test and Post-Test of the Experimental Group

TED Talks Effect on Tenth Grade Students' Vocabulary				Zebua et al.	
25	VAG	28	42	14	196
26	ZPL	42	64	22	484
	Total	1060	1502	442	9212
	Mean	40.76	57.76	17	354.30

Referring to Table 1, the experimental group achieved a total pre-test score of 1060, yielding an average score of 40.76. After implementing the TED Talks application as a learning tool, the post-test total rose to 1502, with a mean score of 57.76. The difference between the pre-test and post-test scores was 442, and the total squared differences (d²) reached 9212. These findings suggest that there was a notable enhancement in the students' vocabulary mastery after undergoing the treatment.

Table 2 presents the pre-test and post-test scores of the control group taught without using the TED Talks Application, including the score differences and their squares for statistical analysis.

	Students' Initial	Pre-Test (Y1)	Post-Test (Y ₂)	Difference Score	-
No	Names			$(d=Y_2 - Y_1)$	Score (d ²)
1	ADM	42	46	4	16
2	BVJ	36	28	-8	64
3	BJS	32	24	-8	64
4	BIT	28	32	4	16
5	CIK	44	56	12	144
6	CCS	40	60	20	400
7	DPS	38	40	2	4
8	EL	30	30	0	0
9	EFS	40	40	0	0
10	EMS	50	64	14	196
11	FT	52	70	18	324
12	IS	40	50	10	100
13	KPS	46	70	24	576
14	KM	36	40	4	16
15	LFM	38	60	22	484
16	MK	48	76	28	784
17	MMS	38	40	2	4
18	NRP	26	30	4	16
19	PS	44	42	-2	4
20	RZ	44	74	30	900
21	RNM	40	60	20	400
22	VMP	32	34	2	4
23	VEB	44	44	0	0
24	WG	40	50	10	100
25	WEM	46	54	10	100

Table 2. The Calculation of Pre-Test and Post-Test of the Control Group

TED Talks Effect on Tenth Grade Students' Vocabulary					Zebua et al.	
	26	ZL	56	86	30	900
		Total	1050	1300	252	5616
		Mean	40.38	50	9.69	216

Based on Table 2, the total pre-test score of the control group is 1050, with a mean score of 40.38. After conventional learning, the total post-test score increased to 1300, with a mean of 50. The difference between the pre-test and post-test scores (d) is 252, while the sum of the squares of differences (d^2) is 5616. These results indicate a significant improvement in students' vocabulary mastery after conventional learning, even using the TED Talks Application is higher.

Based on the data obtained from the experimental group and control group, the following conclusions can be drawn:

Group	Pre-Test	Post-Test
Experimental	40.76	57.76
Control	40.38	50

To examine whether the difference between the two groups was statistically significant, an independent samples t-test was conducted. The t-test result showed that the t-count was 2.677, while the t-table value was 2.010 at the significance level of 0.05 (5%) and degrees of freedom (df) = 50. Since t-count (2.677) > t-table (2.010), the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted. This indicates that the using of the TED Talks Application affected students' vocabulary mastery compared to conventional teaching.

Although the difference between the experimental and control groups was statistically significant, the effect was not very large. This means that while the TED Talks Application helped improve students' vocabulary mastery, the improvement was still limited. One reason may be that TED Talks often present long and complex speeches with many new ideas, but not much repetition of the same vocabulary. As a result, students may find it difficult to remember and understand new words because they do not hear them often enough.

In addition, TED Talks are delivered by native speakers at a natural speed, which can be hard to follow, especially for students who are still learning. Understanding the speech while trying to learn new words at the same time requires a lot of focus and effort, which some students may not be used to. If students are not used to listening to long English texts, they might lose concentration or miss important parts, making it harder to learn the vocabulary.

Compared to previous studies, the results of this research indicate a smaller impact of using the TED Talks Application on students' vocabulary mastery. For instance, Sailun & Idayani (2018) also used TED Talks as part of their teaching media, but their students experienced stronger vocabulary improvement. A key difference lies in the context of language exposure. In their study, students learned vocabulary through videos and engaged with English in real-life environments such as church communities and informal conversations outside of class. Furthermore, the students discussed vocabulary they encountered in their surroundings back in the classroom, which helped reinforce their understanding through repetition and practical use. In contrast, this research's students had limited English exposure beyond the classroom. Most of them communicated in their regional language or Indonesian in daily life, which reduced their chances of encountering or using English outside school. As a result, their vocabulary learning relied mainly on classroom input without much reinforcement in real-world situations.

Similarly, a study by Rohman & Ado (2022), which also integrated TED Talks, reported a more significant improvement in students' vocabulary mastery. Their success was supported by a more academically structured environment, where English was regularly used in discussions and presentations. This daily use of English created consistent exposure, deeper engagement, and better vocabulary retention. On the other hand, students in this research were still not used to such interactive methods. Most were unfamiliar with expressing ideas or participating in activities like discussions and presentations in English, which made it harder for them to benefit fully from the video content.

These contextual differences help explain why the use of TED Talks in this research had only a relatively modest effect. Although the application offered meaningful exposure to authentic English, but the lack of external support, repetition, and active practice in students' daily lives likely limited the impact. This suggests that the effectiveness of multimedia tools like TED Talks depends not only on the tool itself but also on the broader learning environment, teaching strategy, and student readiness.

Even though the effect was small, using TED Talks still supports Mayer's (2021) Cognitive Theory of Multimedia Learning (CTML). In this research, TED Talks provided visual input (videos, animations, and images) and verbal input (words spoken by native speakers), allowing students to process vocabulary through two channels at the same time. TED Talks provide input through both video and sound, which fits with the Multimedia Principle. The natural voices and real speakers in TED Talks also support the Personalization and Voice Principle, which says students learn better when the material feels personal and easy to connect.

Based on these findings, the TED Talks Application may not be ideal as the primary tool for vocabulary learning in this context, particularly for students who are not yet accustomed to processing longer and more complex English input. However, it still holds value as a supplementary learning medium, especially when combined with structured vocabulary activities such as word lists, guided summaries, sentence construction, or group discussions. These supporting strategies can help students focus on the key vocabulary and use it actively in meaningful ways.

In addition, other multimedia applications may offer formats that are more accessible, repetitive, and interactive for beginner—or intermediate-level students. Applications that provide gamified elements, real-life dialogue, and consistent exposure to vocabulary in context may better match students' learning preferences and cognitive levels. Such features not only help sustain students' motivation but also encourage active engagement with the material. Moreover, multimedia tools that combine visual, auditory, and textual input can enhance memory retention and make abstract vocabulary more concrete and meaningful.

Therefore, future research is encouraged to explore using these alternative multimedia tools, individually or in combination with classroom instruction. Future researchers may also consider comparing multiple tools to identify which are most effective in improving vocabulary knowledge, such as word meaning, usage, and retention. This would help teachers select appropriate digital resources and design vocabulary instruction that is not only effective but also engaging for EFL learners in similar school environments.

DISCUSSION

The results showed that students' vocabulary scores increased. The effect was positive, although relatively small, indicating that TED Talks helped students improve their vocabulary, its impact was not very significant in practice. Compared to other studies, the results of this current study show a smaller effect. For example, Sailun & Idayani (2018) found that students not only learn vocabulary through TED Talks but also explored conversations they encountered in their surroundings. This indicates that in their study, students were already familiar with English exposure outside the classroom, such as in communities, churches, and other settings. Additionally, after gathering vocabulary from their environment, they discussed it again in class, which further reinforced their understanding. In contrast, in this current study, the use of English in students' surroundings is still very limited. Most students tend to communicate in their regional language or Indonesian outside the classroom, thereby reducing opportunities to encounter and use English vocabulary in their daily lives. As a result, their vocabulary learning relies heavily on the materials provided in class.

Furthermore, Rohman & Ado (2022) research showed a more significant improvement, with an average pre-test score of 55, which increased to 81 in the post-test. This is a much greater increase compared to the current study, where the average pre-test score was 40.76, and the post-test score was 57.76. One contributing factor to this difference is the more academically supportive environment in Rohman and Ado's study. The school in their research implemented strict regulations requiring students to participate in discussions and presentations in English actively. On the other hand, in this current study, students were still not accustomed to learning methods that involved discussions or presentations in English. Therefore, they needed more practice to become familiar with using English actively throughout the study. These external factors could explain why the use of TED Talks in this study had only a relatively small effect on improving students' vocabulary mastery.

Even though the effect was small, these findings still support Cognitive Theory of Multimedia Learning (CTML). The results align with the Multimedia Principle and the Personalization and Voice Principle in Mayer's theory. Mayer (2017) believes that learning is more effective when words, images, and audio are presented together rather than just text. In this study, TED Talks provided visual input (videos, animations, and images) and verbal input (words spoken by native speakers), allowing students to process vocabulary through two channels at the same time. However, in this study, using multimedia through TED Talks did not produce the same strong effect as in another research.

Based on the discussion above, the TED Talks Application is not recommended as the primary tool for vocabulary learning at SMAS GKPI Padang Bulan. Some students found the videos challenging due to the complexity of the language and lack of structured repetition. TED Talks videos tend to focus more on delivering information without explicit vocabulary repetition, which may not be ideal for students who require more structured vocabulary practice. Additionally, this method requires high concentration, and some students found it challenging to stay focused while watching. However, other multimedia-based applications such as Duolingo, Cake App, and Spotify could be used or tested in the school. Duolingo offers structured vocabulary lessons with repetition exercises, helping students understand and remember new words more effectively (Aulia et al., 2020). This app allows students to review vocabulary many times so they can remember it better. It also shows pictures, sounds, and simple example sentences to make the meaning of words clearer. The Cake App offers a variety of short videos, such as daily conversations, movie clips, and commonly found vocabulary or idioms on the internet. In addition, the app also provides interactive vocabulary quizzes that allow students to immediately practice and reinforce what they have learned, making them more enthusiastic about learning English vocabulary (Reica, 2024). Therefore, this application could be an effective and enjoyable alternative for improving students' vocabulary mastery. Spotify allows students to practice listening while reading song lyrics, helping them learn vocabulary in a more enjoyable and less boring way (Fitri et al., 2024). The repetition of words and phrases in songs helps learners memorize new vocabulary more easily. Many song lyrics contain high-frequency words that are useful for daily communication. Additionally, encountering vocabulary in context helps students understand meaning more deeply than through rote memorization.

This study shows that while TED Talks can affect vocabulary mastery, its effect was not as strong as other studies and was less effective in SMAS GKPI Padang Bulan. Therefore, future research should explore other multimedia applications that better match students' interests and learning styles, leading to more effective and meaningful vocabulary learning. These alternatives may provide a more structured and engaging approach for students with limited English exposure, as seen in this study.

Some challenges were found in this study that must be acknowledged when interpreting the results and assessing the validity of the findings. One of the biggest challenges is the limited exposure to English in students' daily environments, significantly impacting the effectiveness of TED Talks as a vocabulary acquisition tool. Unlike contemporary research indicating that students interact with English in social contexts and use it outside the classroom, the participants in this study predominantly communicated in their regional languages or Indonesian. Such unsupportive environment, according to Rosa et al. (2025) hindered the recall and practical application of new vocabulary, reducing the overall effectiveness of TED Talks. Moreover, the students were not yet acquainted with interactive and communicative learning methodologies, such as class discussions or presentations in English, leading to a lack of confidence and limited English interaction (Rosa et al., 2025). Thus, their potential was not fully accomplished despite implementing the multimedia principles outlined in Mayer's Cognitive Theory of Multimedia Learning. Furthermore, the complexity of TED Talks and the absence of systematic repetition may have diminished the content's accessibility and appeal for learners at this proficiency level. The

contextual and instructional aspects demonstrate why the vocabulary improvements, although helpful, were comparatively modest compared to other studies. Thus, despite the results corresponding to the theoretical framework of multimedia learning, they also emphasize integrating instructional tools with students' readiness, environment, and needs. Future studies should address these limitations and find alternative multimedia tools with enhanced repetition, structure, and student involvement for better vocabulary learning outcomes.

CONCLUSIONS

This study shows that the improvement of using TED Talks was not highly significant though the application did contribute positively. The students' mean score rose from 40.76 in the pre-test to 57.76 in the post-test, reflecting a gain in vocabulary understanding. Additionally, the t-test calculation showed that the obtained t-value (2.677) was higher than the critical value from the t-distribution table (2.010), which suggests that the application had a meaningful effect on student performance. This means that the results were statistically significant, but the practical effect remained limited. The effectiveness of this application in this study was less than optimal due to several factors, such as the lack of structured learning sequences in TED Talks videos, limited explicit vocabulary repetition, and the complexity of the language used in the videos. Therefore, while Mayer's theory remains relevant, the choice of material and delivery method in TED Talks may not be entirely suitable for the needs of students in this learning environment.

Based on the experience during this study, the researcher does not directly recommend using TED Talks as the sole medium for learning vocabulary. However, it would be beneficial to apply additional strategies to enhance learning effectiveness if teachers still wish to use it. Future researchers can explore more varied approaches to vocabulary learning using multimedia. Further research could also examine the long-term impact of using multimedia on students' vocabulary retention.

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