



The Effect of TED-Ed Animated Videos on Senior High School Students' Listening Skills

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Abstract. Listening skills play a primary role in the ability to communicate in a foreign language. While previous studies have demonstrated the benefits of TED-Ed animation-based media, few have examined the impact of its interactive features: Think, Dig Deeper, and Discuss on listening skills, especially in Indonesian senior high schools. This study analyzed the use of TED-Ed videos and these features to improve listening skills. A quasi-experimental design with pre-test and post-test was applied to 72 eleventh-grade students, divided into experimental and control groups. Data were collected through a listening comprehension test and analyzed using an independent sample t-tests. The findings revealed a statistically significant difference in listening comprehension between the groups, with the experimental group outperforming the control group (M: 92.14 vs. M: 85.42. Furthermore, the effect size analysis revealed a large effect (Cohen's $d = 1.66$), indicating a significant impact of TED-Ed's interactive features on students' listening skills. These findings suggest that integrating the Think, Dig Deeper, and Discuss activities into TED-Ed videos can effectively improve listening comprehension by encouraging active engagement and deeper processing of audiovisual content in English as a foreign language classrooms.

Keywords: Animated Videos; English learning; Interactive Features; Listening Skills; TED-Ed.

1. BACKGROUND

Listening comprehension is widely regarded as a fundamental skill in learning English, as it serves as the foundation for communication and fosters the development of other language skills. Among the four language skills, listening plays a crucial role in the learning process, as it enables learners to comprehend spoken messages, interpret various perspectives, develop cultural awareness, and enhance their speaking skills (Metruk, 2018; Ozoturk & Tekin, 2020). While extremely important, listening skills remain one of the most challenging skills for learners of English as a Foreign Language (EFL), including in Indonesia (Arono, 2014; Febriana et al., 2023; Hussaeni et al., 2020; Simamora & Yuyun, 2021). Students often face difficulties with unfamiliar vocabulary, fast speech, limited background knowledge, and maintaining concentration during listening activities (Humeniuk et al., 2021; Ozoturk & Tekin, 2020). Therefore, teachers need to provide meaningful listening experiences supported by appropriate learning media to facilitate students' comprehension and engagement (Anggraeni & Indriani, 2018; Damayanti & Sumarniningsih, 2022; Rahmatika et al., 2016)

An approach that has gained attention in listening instruction is the use of audiovisual media. By integrating visual and auditory information, audiovisual materials provide learners with contextual support that helps them understand spoken language more effectively (Gjinali

& Piri, 2023; Rashtchi et al., 2021). Among the various platforms available, TED-Ed offers animated educational videos that present authentic language input through engaging visuals and narration, making learning more accessible and meaningful for learners (El Miedany, 2019; Liu, 2023). Previous studies have reported that TED-Ed videos can positively contribute to language learning by improving comprehension, vocabulary retention, and learner engagement (Rashtchi et al., 2021). In addition, TED-Ed also provides interactive features including Think, Dig Deeper, and Discuss. These features encourage students to answer comprehension questions, explore additional resources, and participate in discussions after watching a video. These activities may transform passive listening into an active learning process that fosters deeper understanding and engagement with the content.

Although previous studies have shown the positive effect of TED-Ed videos in language learning, most of these studies focused on videos as audiovisual learning resources rather than examining the contribution of TED-Ed's interactive features. Furthermore, existing studies have primarily involved university students and were conducted in foreign language education contexts (Al-Athwary & Lasloun, 2021; Gjinali & Piri, 2023; Liu, 2025). Research involving high school students in Indonesia remains limited (Damayanti & Sumarniningsih, 2022; Febriana et al., 2023; Jasmin et al., 2021; Muzamir, 2021). More importantly, little is known about whether students who learn through TED-Ed videos integrated with Think, Dig Deeper, and Discuss achieve better listening outcomes than students who only watch TED-Ed videos without these interactive features and use them as passive learning media.

The limited number of studies focusing on the use of TED-Ed as interactive media with the features at the senior high school level indicates a need for further research, particularly in examining their impact on students' listening achievement. Therefore, this study aims to investigate whether senior high school students taught using TED-Ed animated videos integrated with Think, Dig Deeper, and Discuss achieve better listening skills than those taught using TED-Ed videos without interactive features.

Accordingly, this study addresses the following research question and hypothesis: RQ: Do senior high school students taught using TED-Ed animated videos with interactive features (Think, Dig Deeper, and Discuss) achieve better listening skills than those taught without interactive features?

H1: Students taught using TED-Ed animated videos with interactive features (Think, Dig Deeper, and Discuss) achieve significantly better listening skills than those taught without interactive features.

2. THEORETICAL FRAMEWORK

Listening Skills

Listening is a vital skill in English language learning as it serves as the primary source of language input and supports the improvement of other language skills. Through listening, learners acquire vocabulary, grasp pronunciation patterns, interpret meaning, and develop the communicative competence needed for effective interaction (Metruk, 2018; Ozoturk & Tekin, 2020). However, listening is often considered one of the most challenging skills for EFL learners due to factors such as unfamiliar vocabulary, rapid speech, limited background knowledge, and concentration difficulties (Febriana et al., 2023; Humeniuk et al., 2021). Therefore, effective listening instruction requires appropriate learning resources that can facilitate comprehension and engagement.

Audiovisual Media

The use of audiovisual media in language learning is based on well-established cognitive theories and is supported by empirical evidence. The Multimedia Learning Theory by Mayer (2001) explains that the learning process becomes more effective when verbal and visual information is processed simultaneously, as this optimises cognitive capacity through dual-channel processing. Similarly, the Dual Coding Theory of Clark and Paivio (1991) states that information is encoded through verbal and non-verbal systems, and the integration of these two systems strengthens understanding and memory retention. These theories emphasise that meaningful learning occurs when learners actively process and integrate new information with prior knowledge. Further empirical studies support this claim, showing that audiovisual media enhance listening comprehension by providing auditory and visual input simultaneously, facilitating the formation of meaning through exposure to contextual and authentic language (Gjinali & Piri, 2023; Rashtchi et al., 2021). Compared to audio input alone, audiovisual materials enhance learners' ability to interpret spoken language through visual cues, resulting in improved understanding and retention. Therefore, audiovisual media is widely recognized as an effective tool in English language teaching for improving listening performance and student engagement (Yadi, 2022).

TED-Ed and Its Interactive Features

TED-Ed has emerged as a valuable educational resource among various audiovisual learning platforms. TED-Ed provides animated educational videos that combine narration, illustrations, and educational content in an engaging format (El Miedany, 2019; Liu, 2023; Rahmatika et al., 2016). In addition to its videos, TED-Ed offers interactive features such as Think, Dig Deeper, and Discuss. The Think feature allows learners to assess their

understanding through comprehension questions, Dig Deeper encourages further exploration of the topic through additional resources, and Discuss provides an opportunity for reflection and interaction with peers. These features promote active learning by encouraging learners to engage cognitively with the content rather than simply watching the video passively.

Gaps in the Existing Literature

Previous studies have demonstrated the effectiveness of TED-Ed videos in supporting language learning outcomes, including listening comprehension, vocabulary acquisition, and learner engagement (Damayanti & Sumarniningsih, 2022; Liu, 2023; Rashtchi et al., 2021). However, most studies have treated TED-Ed primarily as an audiovisual learning resource, focusing on the benefits of watching the videos themselves rather than examining the pedagogical contribution of its interactive features. As a result, learners in these studies were generally exposed to TED-Ed through passive viewing activities. Furthermore, existing research has largely been conducted at the university level and in foreign educational contexts (Al-Athwary & Lasloun, 2021; Gjinali & Piri, 2023), while in Indonesian senior high schools remains limited. More importantly, little empirical evidence is available regarding whether students who learn through TED-Ed videos integrated with Think, Dig Deeper, and Discuss achieve better listening outcomes than those who learn only through watching TED-Ed videos without these interactive features. Therefore, further investigation is needed to determine the added value of TED-Ed's features for interactive learning in enhancing listening skills among Indonesian EFL learners.

3. METHODOLOGY

This section presents the methodology employed in the study, including the research design, participants, instruments, data collection procedures, and data analysis techniques used to address the research question.

Research Design

This study used a quantitative approach with a pre-test–post-test quasi-experimental control group design. This design is commonly used in educational research when random assignment of participants is not feasible, and it allows researchers to analyze the impact of an intervention by comparing the experimental group and the control group (Creswell & Creswell, 2018). This study examined whether students taught using TED-Ed animated videos integrated with the interactive features Think, Dig Deeper, and Discuss achieved better listening skills than those taught using TED-Ed videos without interactive features.

Participant

The participants were 72 eleventh-grade students from a public senior high school in Surabaya, Indonesia. Two intact classes were assigned as the experimental group and the control group.

Instruments

The instrument used in this study was a listening comprehension test administered as a pre-test and post-test. The test consisted of 20 multiple-choice questions developed based on the 11th-grade English curriculum and focused on identifying main ideas, supporting details, and interpreting information from audiovisual texts. Content validity was established through expert judgment, and the instrument was deemed valid with minor revisions. Reliability analysis yielded a Cronbach's Alpha coefficient of $\alpha = .744$, indicating acceptable levels of internal consistency and confirming that the instrument is reliable for measuring students' listening skills (George & Mallery, 2019).

Data Collection

Data were collected over a series of instructional sessions. Both groups completed a pre-test prior to the treatment and a post-test after the treatment. During the intervention, the experimental group was exposed to TED-Ed animated videos integrated with *Think*, *Dig Deeper*, and *Discuss*, while the control group learned through the same TED-Ed videos without the interactive features.

Data Analysis

Data analysis was conducted using IBM SPSS Statistics 27 version. Descriptive statistics were calculated, followed by assumption testing, including test of normality and homogeneity (Levene's test). Based on the results of the assumption tests, either independent samples t-test or Mann-Whitney U test was conducted to compare the post-test scores between the experimental and control groups. Statistical significance was set at the .05 level. Furthermore, According to Cohen (1988), effect sizes (Cohen's d) was calculated to determine the magnitude of the treatment effect.

Ethical Considerations

Permission to conduct the study was obtained from the school administration prior to data collection. Participants were informed about the purpose of the study, and their participation was voluntary.

4. RESULT AND DISCUSSION

Descriptive Statistics of Listening Pre-test and Post-test Scores

The hypothesis test was preceded by an assumption test to determine the appropriate statistical analysis. Since the number of participants exceeded 50, the Kolmogorov–Smirnov test was used as the primary indicator of normality, supported by the Shapiro–Wilk test (Mishra et al., 2019). The results showed that all groups obtained Kolmogorov–Smirnov significance values above 0.05, indicating that the data were normally distributed. Additionally, the homogeneity test yielded a significance value of 0.804 (> 0.05), indicating that the variances between the experimental and control groups were homogeneous. Therefore, the assumptions for parametric analysis were met, and an independent samples t-test was conducted.

Prior to the independent samples t-test, descriptive statistics of the pre-test and post-test scores were examined. Table 3 shows that both groups had comparable pre-test scores, indicating similar initial listening ability.

Table 1. Descriptive Statistics of Listening Pre-test and Post-test Scores.

Groups	N	Mean	Std. Deviation	Std. Error Mean
Pre-test Control	36	75.39	4.506	.751
Post-test Control	36	85.42	4.017	.669
Pre-test Experimental	36	74.75	4.010	.668
Post-test Experimental Group	36	92.14	4.065	.677

After the treatment, both groups showed improvement in their post-test scores. However, the experimental group achieved a higher mean score (92.14) compared to the control group (85.42). This indicates that students who learned through TED-Ed animated videos with interactive features experienced greater improvement in listening performance. To determine whether this difference was statistically significant, an independent samples t-test was conducted.

Hypothesis Testing Using Independent Sample t-Test

An independent samples t-test was performed to examine whether there was a significant difference in post-test scores between the experimental and control groups.

Table 2. Result of Independent Samples t-Test.

Levene' Sig.	t	df	Sig. (2-tailed)	Mean Difference
.804	7.058	70	.000	6.722

Based on the table 4, the results revealed a statistically significant difference between the two groups ($t(70) = 7.058$, $p < 0.001$), with the experimental group achieving higher listening scores than the control group. Therefore, the alternative hypothesis (H_1) was accepted this finding confirms that the use of TED-Ed animated videos with interactive features significantly improved students' listening skills. To further analyze learning progress within each group, a paired samples t-test was conducted.

Paired Samples t-Test

A paired samples t-test was used to examine the improvement from pre-test to post-test within each group. The results in Table 5 show that both groups experienced significant improvement in their listening scores after the treatment period.

Table 3. The Results of Paired Samples t-Test.

Groups	Mean Difference	t	df	Sig. (2-tailed)
Control	-10.667	-101.193	35	.000
Experimental	-16.750	-36.268	35	.000

Although both groups showed significant improvements, the experimental group demonstrated a larger mean difference (-16.750) compared to the control group (-10.667), indicating a more significant improvement in their listening skills. To further clarify the practical significance of this difference, an effect size analysis was conducted.

Effect Size

The effect size analysis using Cohen's d was conducted to determine the practical significance of the treatment effect between the experimental and control groups.

Cohen's d is calculated using the following formula:

$$\text{Cohen's } d = \frac{(\text{Mean}_1 - \text{Mean}_2)}{SD_{\text{Pooled}}} \dots\dots\dots(i)$$

Based on the post-test data, these values are entered into the formula as follows:

$$SD_{\text{pooled}} = \sqrt{\frac{(36-1)(4.065)^2 + (36-1)(4.017)^2}{36+36-2}}$$

$$SD_{\text{pooled}} = \sqrt{16.33} = 4.04$$

$$d = \frac{(92.14 - 85.42)}{4.04} = 1.66$$

The result showed a Cohen's d value of 1.66, which, according to Cohen (1988), indicates a large effect size (small ≈ 0.2 , medium ≈ 0.5 , large ≥ 0.8). This suggests that TED-Ed animated videos with interactive features had a strong and meaningful impact on improving students' listening skills.

Discussion

Students' Listening Skills Achievement after using TED-Ed Animated Videos

As mentioned in the previous section, this study found that students achieved better listening skills after learning through TED-Ed animated videos with interactive features that included Think, Dig Deeper, and Discuss. These videos integrate narration, animation, and visual context, allowing learners to process meaning more easily through both auditory and visual inputs simultaneously. Previous studies have confirmed that audiovisual media promotes listening skill by providing multimodal input that enhances comprehension (Anggraeni & Indriani, 2018; Rashtchi et al., 2021).

This gain can also be explained by multimedia learning theory. Mayer (2001) states that learning becomes more effective when verbal and visual information are integrated, because learners process the input through two channels. Similarly, Dual-Coding Theory (Clark & Paivio, 1991). states that integrating verbal and non-verbal systems enhances comprehension and memory. In this context, TED-Ed videos provide synchronized verbal narration and visual representations, which help students construct their understanding more effectively.

In addition, TED-Ed interactive features play a crucial role in strengthening listening skill development. The Think feature guides students to focus on key information and evaluate their understanding, which enhances cognitive engagement and monitoring of comprehension (Damayanti & Sumarningsih, 2022; Jasmin et al., 2021). The Dig Deeper feature encourages students to explore content more critically by connecting new information with prior knowledge, thereby fostering deeper understanding (Rahmatika et al., 2016; Sanjmyatav & Sumiya, 2020). Meanwhile, the Discuss feature promotes collaborative

communication and learning, allowing students to express ideas, clarify understanding, and interpret meaning from various perspectives (Kozłńska, 2021; Megawati & Utami, 2020).

The integration of these features transforms the learning process from passive listening to active engagement. Students not only receive input but are also required to process, reflect on, and respond to the content. The Think feature supports focus and comprehension, Dig Deeper encourages critical exploration, while Discuss facilitates interaction and negotiation of meaning. This combination contributes to improved listening comprehension, retention, and student engagement, highlighting the effectiveness of TED-Ed animated videos as instructional tools in the context of English as a Foreign Language (EFL) listening.

5. CONCLUSION AND SUGGESTIONS

This study found that TED-Ed animated videos with interactive features have a positive impact on students' listening skills. The experimental group achieved higher post-test scores than the control group, indicating greater learning gains following the intervention. These findings suggest that interactive audiovisual learning can effectively improve students' listening skills.

Furthermore, teachers are encouraged to integrate TED-Ed animated videos into listening instruction to enhance student comprehension and engagement by optimizing the use of interactive features in TED-Ed. Students are recommended to use TED-Ed videos as additional learning resources outside the classroom to improve their listening skills through regular exposure to authentic audiovisual materials. Future studies are recommended to explore the use of TED-Ed in other language skills and at different educational levels, as well as to develop assessment tools better able to measure the contribution of each interactive feature particularly the Discuss feature to gain a more comprehensive understanding of its impact on learning.

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