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THE EFFECTIVENESS OF DUOLINGO AS TECHNOLOGY-BASED INSTRUCTIONAL MEDIA IN LEARNING ENGLISH SPEAKING

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Abstract

This study aimed to determine the effectiveness of the Duolingo application as technology-based instructional media in learning English speaking especially, in the four speaking aspects. It implemented experimental research with a pre-experimental design. The participants of this study were 25 students enrolled in the eleventh grade at a State Senior High School in Jombang, East Java, Indonesia. Speaking tests in the form of paired dialogue were used to measure students' speaking skill before and after learning English using Duolingo. The data analysis using Wilcoxon Signed Rank Test was used to answer the research questions. The results showed that there was a significant difference in students' speaking skills before and after learning by using Duolingo as technology-based instructional media. Further, this study also revealed that using Duolingo in learning speaking was effective in every aspect – fluency, accuracy, pronunciation, and vocabulary. It is suggested for teachers to use Duolingo as an alternative app for out-of-class learning to enhance students' speaking skills.

Keyword: *duolingo, technology-based instructional media, learning speaking*

Abstrak

Penelitian ini bertujuan untuk mengetahui efektivitas aplikasi Duolingo sebagai media pembelajaran berbasis teknologi dalam pembelajaran keterampilan berbicara bahasa Inggris terutama pada empat aspek berbicara. Penelitian ini mengimplementasikan jenis penelitian eksperimental dengan desain pra-eksperimental. Subyek dari penelitian ini adalah 25 siswa kelas sebelas di sebuah Sekolah Menengah Atas Negeri di Jombang, Jawa Timur, Indonesia. Asesmen berbicara dalam bentuk dialog digunakan untuk mengukur kemampuan berbicara siswa sebelum dan sesudah menggunakan belajar bahasa Inggris dengan menggunakan Duolingo. Analisis data menggunakan Wilcoxon Signed Rank Test untuk menjawab pertanyaan-pertanyaan penelitian. Hasil penelitian menunjukkan bahwa terdapat perbedaan yang signifikan dalam keterampilan berbicara siswa sebelum dan sesudah belajar dengan menggunakan Duolingo sebagai media pembelajaran berbasis teknologi. Selanjutnya, penelitian ini juga membuktikan bahwa penggunaan Duolingo juga efektif dalam pembelajaran keterampilan berbicara di setiap aspek, yaitu kelancaran, ketepatan, pengucapan, dan kosakata. Peneliti menyarankan guru untuk menggunakan Duolingo sebagai aplikasi alternatif pembelajaran di luar kelas untuk meningkatkan kemampuan berbicara siswa.

Kata kunci: *duolingo, media pembelajaran berbasis teknologi, belajar berbicara*

Introduction

Technological advances have an impact on all sectors of life, including education. The inclusion of technological developments into education is one form of encouragement for educational progress. Teachers are now required to be technology literate to support successful learning. Understanding this technology can help teachers design innovative learning practices, from procedures to the media used. Learning media is a complementary tool in the learning process to increase the effectiveness and efficiency of achieving learning goals. This effectiveness and efficiency can be characterized through students' understanding of the lessons they receive (Saputri *et al.*, 2018).

Teachers can use technology-based instructional media because currently, students cannot be separated from technology, for example, the use of gadgets. This matter is where the teacher's role is to fill students' interest in gadgets to be

used as an exciting and engaging media for teaching and learning English. There are many applications resulting from technology that can help educational activities. Some of them include Google Classroom, Discord, Zoom, Quizziz, and so on (Maulina *et al.*, 2022). These applications not only facilitate students' learning activities but also hone special students' abilities. One of the many applications, Duolingo, can be used to hone skills in English language learning.

Duolingo is one of the popular applications in this increasing technology era. Moreover, Duolingo is a kind of online learning media that improves students' language skills. Many languages are provided inside this Duolingo Application, which can be used to help language learning all over the world. English is one of the languages provided in Duolingo learning media. This Duolingo learning application encourages the teacher's attention with its gamification features, making learning more fun. By "gamifying" learning, Duolingo has kept the learners interested and less self-conscious about learning (Nushi & Eqbali, 2017). Realizing that students are more motivated when using engaging media recently, many teachers have been using this application to help students learn.

Inside Duolingo, several skills are served to encourage the students' attractiveness. Nowadays, students' attractiveness in learning is mostly needed to ensure they are motivated and interested in following the learning classroom. The language skills learned in this application are complete, ranging from listening, writing, speaking, grammar, and vocabulary, and are available on various platforms (Amin, 2021). These are the essential basic skills students need to gain language learning comprehension. Using Duolingo, teachers intend to create a new, exciting learning atmosphere. Otherwise, the Duolingo application serves several English exercises. The exercises are of many types: translation, matching, pairing, listening, and speaking exercises (Nushi & Eqbali, 2017). The exercises in Duolingo encourage the students to participate more actively in English learning.

Duolingo provides small text to hear and transcribe, which helps students relate to their English-speaking word production. Students are encouraged to know the correct sounds of English phonetic symbols in words provided through this. The students also have to record their pronunciation to assess their speaking ability (Tiara *et al.*, 2021). This is the way Duolingo encourages students to speak by recording their voice and considering the appropriate phonetic

symbol sounds. This application can be implemented in English learning to improve students' English speaking skills.

Previous studies have highlighted the effectiveness of Duolingo as a technology-based instructional media in teaching English context. Yuwono (2022) investigated the effectiveness of Duolingo's application in teaching vocabulary. The study revealed that there was a significant increase in student scores after being taught English using the Duolingo application. Similar studies about the implementation of Duolingo in English vocabulary teaching were also carried out by Aisyah & Hidayatullah (2020) and Hardiyanti *et al.* (2021). These two studies have the same results: Duolingo has a significant influence in increasing students' vocabulary.

In the context of learning speaking skills using Duolingo, few previous studies have specifically discussed this application's effectiveness. Herlina *et al.* (2021) investigated using Duolingo as a technology-based learning media to improve students' speaking skills with Senior High School students as research subjects. The study results showed that students' speaking ability scores always increase each cycle. Apart from that, using Duolingo also increases students' self-confidence and motivation to speak English. Other research conducted by Niah & Pahmi (2019) using the ASSURE model revealed that Duolingo can improve speaking and listening skills in Junior High School students.

Speaking becomes one of the essential skills that students need to gain in learning English. This is because speaking is one of the productive language abilities required by humans to convey information to others in a communicative and appropriate manner (Herlina *et al.*, 2021). Teachers are currently faced with creative and entertaining English learning, mainly speaking skills. The learning media employed, the methods used, and strategies that generate student interest and the classroom climate can all contribute to exciting learning. Making the sessions as fun as possible is becoming increasingly essential for English teachers to assist students in developing exclusively speaking English skills. Many teachers feel that students learn best when they connect with others. Students should develop comprehension, articulation, grammar, vocabulary, and speaking fluency (Syafrizal *et al.*, 2022).

Specifically in learning English speaking, there are several aspects that students need to master. Brown (2001) suggests four aspects of speaking that need to assess to know the students' speaking mastery; they are: fluency, accuracy, pronunciation, and vocabulary. Accuracy is concerned with correct

grammar and vocabulary, whereas fluency is concerned with speaking smoothly and clearly. While Luoma (2004) proposes different criteria such as pronunciation (both segmentals and suprasegmentals), grammar, vocabulary, and even sociolinguistics application of speech. Overall, mastering the aspects of speaking is essential for students because it allows them to communicate effectively and efficiently and be better understood by native speakers. Further, in selecting media for students' English learning, teachers need to pay attention to the advantages of the media in supporting students' speaking skills and be more detailed in supporting every aspect of it.

Highlighting several points from the previous studies, the first is related to the effectiveness of Duolingo in teaching English, and the second is that there still needs to be more studies examining Duolingo in English speaking. Thus, this research focuses on the effectiveness of Duolingo as a technology-based instructional media in learning English speaking skills in senior high school students. Further, the current study also reveals its effectiveness, more specifically on aspects of assessment in speaking, namely fluency, accuracy, pronunciation, and vocabulary (Brown, 2001). Previous studies have yet to focus on these aspects, but rather in general terms. Hence, this study considered the following research questions:

1. Is Duolingo effective as a technology-based learning media in learning English speaking?
2. Is Duolingo effective as a technology-based learning media in learning the four aspects of English speaking?

Research Methods

Design

This study aims to determine the effectiveness of the Duolingo application as a technology-based instructional media in learning English speaking. The researchers used experimental research with a pre-experimental design to attain this objective. According to Creswell (2012), experimental design is a quantitative research method used to determine the effect of the independent variable (treatment) on the dependent variable (outcome) under controlled conditions. Specifically, the experimental research implemented is pre-experimental design. The design involved one group that was pretested, given experimental treatment using Duolingo, and posttested. It intends to know whether there is a significant

difference on students' English speaking before and after using Duolingo, which indicates effectiveness.

Participant

The participants of this study were 25 students enrolled in the eleventh grade at a State Senior High School in Jombang, East Java, Indonesia. This group of participants comprised of 10 male students (40%) and 15 female students (60%) that were chosen using non-randomized sampling techniques.

Instrument

The instruments used in this study were speaking tests for pretest and posttest. The speaking tests used were in the form of dialogue to measure the students' speaking skills before and after learning English using Duolingo. The pretest and posttest used the same material and instruction but differed in situation. This test required students to do dialogue in pairs about asking for and giving opinions regarding situations related to analytical exposition text within 4 minutes. The situations were presented in the form of pictures that students must choose at random. A scoring rubric was adapted from Brown (2001) to assess students' speaking skills in four aspects: fluency, accuracy, pronunciation, and vocabulary. Further, the validity test of the instruments used was carried out through expert validators.

Data Collecting Technique

Before the experimental treatment, a pretest was given. In the pretest, the researchers prepared some picture cards that contain particular situations related to asking and giving opinion and analytical exposition text. The students were given 4 minutes to choose a picture randomly and have a dialogue in pairs. One student acted as an opinion asker about the situation they have chosen, another student acted as an opinion giver. The students' performances were scored in four aspects using the scoring rubric. After conducting the pretest, the treatment was given by reviewing about asking and giving opinion and analytical exposition, giving some modelling, and practicing. Following the treatment in the classroom, the students were instructed to drill their speaking skills using Duolingo independently for a week. The students should send the screenshots of their drilling achievement on Duolingo regularly to control their independent learning. In the last day of the week, the posttest was given after the treatment.

The form of the posttest was similar to the pretest. However, different pictures of situation were used.

Data Analysis Technique

The data in the present study were analyzed statistically with the help of SPSS program to answer the research questions. Prior to the main data analysis an assumption test of normality was conducted using Shapiro-Wilk ($n < 50$). The results are presented in Table 1:

Table 1. Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest_TotalScore	,205	25	,008	,886	25	,009
Posttest_TotalScore	,204	25	,009	,878	25	,006

a. Lilliefors Significance Correction

Based on the test of normality table in the Shapiro-Wilk Sig. column, it can be seen that the total score of the pretest is 0.009 and the total score of the posttest value is 0.006. Both Sig values. are lower than the alpha value ($0.009 < 0.05$ and $0.006 < 0.05$). Thus, the sample data is not normally distributed.

Further, the normality test was also conducted to each aspect of speaking to get a detail information as presented in Table 2.

Table 2. Tests of Normality of the Speaking Aspects

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest_Fluency	,333	25	,000	,721	25	,000
Posttest_Fluency	,241	25	,001	,848	25	,002
Pretest_Accuracy	,457	25	,000	,569	25	,000
Posttest_Accuracy	,259	25	,000	,859	25	,003
Pretest_Pronunciation	,298	25	,000	,771	25	,000
Posttest_Pronunciation	,513	25	,000	,392	25	,000
Pretest_Vocabulary	,337	25	,000	,729	25	,000
Posttest_Vocabulary	,375	25	,000	,693	25	,000

a. Lilliefors Significance Correction

Based on the results of the normality test in the Shapiro-Wilk column, it can be seen that the sig. values of fluency are below 0.05 for both pretest and post test (pretest = 0.000, posttest = 0.002). The sig. values of accuracy are found to be lower than the alpha value 0.05 both in pretest as posttest (pretest = 0.000, posttest = 0.003). Similar results of sig. values are presented for both

pretest and posttest of pronunciation and vocabulary aspects, which is 0.000. The value is also lower than the alpha value 0.05. Thus, the sample data in each aspect of speaking is not normally distributed. Since the assumption of parametric test was not fulfilled, a non-parametric test Wilcoxon Signed Rank Test was implemented for the data analysis.

Research Finding and Discussion

Result in the Effectiveness of Duolingo as a Technology-based Learning Media in Learning English Speaking

The data analysis using Wilcoxon Signed Rank Tests was used to answer the first research question: Is Duolingo effective as a technology-based learning media in learning English speaking? With the following results,

Table 3. Ranks Table of Speaking

		N	Mean Rank	Sum of Ranks
Posttest_Speaking - Pretest_Speaking	Negative Ranks	2 ^a	4,50	9,00
	Positive Ranks	22 ^b	13,23	291,00
	Ties	1 ^c		
	Total	25		

a. Posttest_TotalScore < Pretest_TotalScore

b. Posttest_TotalScore > Pretest_TotalScore

c. Posttest_TotalScore = Pretest_TotalScore

Based on Table 3. Ranks Table of Speaking, it can be seen that from 25 data, there are 2 cases of negative ranks (posttest < pretest), 22 cases of positive ranks (posttest > pretest), and 1 ties (posttest = pretest) were shown in the table. The results means that most of the students (22 out of 25 students) experienced an increase on their speaking skills after learning English speaking using Duolingo, 2 students experienced a decrease, while 1 student experienced neither an increase nor a decrease in his/her speaking. Table 3 also informs that the mean rank of positive ranks is 13.23, while the mean rank of negative ranks is 4.50. It means that the positive ranks is 8.73 points higher than the positive ranks.

Table 4. Test Statistics of Speaking

	Posttest_Speaking - Pretest_Speaking
Z	-4,076 ^b
Asymp. Sig. (2-tailed)	,000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Further result of Wilcoxon Signed Rank Test presented in Table 4, Test Statistics of Speaking, shows the Asymp. Sig. (2 tailed) value of 0.000. The value is lower than the alpha value 0.05 ($0.000 < 0.05$). Hence, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted. This means that there is a significant difference on students' English speaking before and after learning by using Duolingo as technology-based instructional media. Consulting the mean ranks of positive and negative ranks Table 3, it can be concluded that overall Duolingo is effective as a technology-based instructional media in learning English speaking.

Result in the Effectiveness of Duolingo as a Technology-based Learning Media in Learning the Four Aspects of English Speaking

A detail analysis on each aspect of speaking were then conducted to get a detail information on the effect of Duolingo. The speaking aspects analyzed were fluency, accuracy, pronunciation, and vocabulary. Since the normality assumptions were not fulfilled, the Wilcoxon Signed Rank Test was implemented with the following result,

Table 5. Ranks Table of Fluency

		N	Mean Rank	Sum of Ranks
	Negative Ranks	2 ^a	6,00	12,00
Posttest_Fluency - Pretest_Fluency	Positive Ranks	11 ^b	7,18	79,00
	Ties	12 ^c		
	Total	25		

- a. Posttest_Fluency < Pretest_Fluency
- b. Posttest_Fluency > Pretest_Fluency
- c. Posttest_Fluency = Pretest_Fluency

For the speaking fluency aspect, based on Table 5, Ranks Table of Fluency, it can be seen that from the total of 25 data, there are 2 cases of negative ranks in which the students' score in posttest is lower than the pretest (posttest < pretest). There are also 11 cases of positive ranks shown in the data, which means the 11 data scores increase from the pretest to the posttest (posttest > pretest). In addition, there are 12 cases of ties (posttest = pretest). Table 5 also informs that the mean rank of positive ranks is 7.18, while the mean rank of negative ranks is 6.00. From this table, it can be seen that the student's speaking fluency' mean score of positive ranks is 1.18 higher than the negative ranks.

Table 6. Test Statistics Table of Fluency

Posttest_Fluency - Pretest_Fluency	
Z	-2,517 ^b
Asymp. Sig. (2-tailed)	,012

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Consulting the Asymp. Sig. (2-tailed) presented in Table 6, Test Statistics Table of Speaking Fluency, it can be seen that the value is 0.012, which is lower than the alpha value of 0.05 ($0.012 < 0.05$). It means that there is a significant difference in students' speaking fluency scores before and after learning using Duolingo as technology-based instructional media. The situation indicates that the implementation of Duolingo have significant effect on students' speaking fluency.

Table 7. Ranks Table of Accuracy

		N	Mean Rank	Sum of Ranks
Posttest_Accuracy - Pretest_Accuracy	Negative Ranks	1 ^a	7,50	7,50
	Positive Ranks	17 ^b	9,62	163,50
Ties		7 ^c		
Total		25		

a. Posttest_Accuracy < Pretest_Accuracy

b. Posttest_Accuracy > Pretest_Accuracy

c. Posttest_Accuracy = Pretest_Accuracy

For the speaking accuracy aspect, based on Table 7, Ranks Table of Accuracy, it can be seen that from the total 25 data, there is only one case of negative ranks (posttest < pretest). There are also 17 cases of positive ranks shown in the data, which means the 17 data scores increase from the pretest to the posttest (posttest > pretest). In addition, there are 7 cases that are similar between the posttest accuracy score and pretest accuracy score (Ties). The mean rank of students' speaking accuracy in positive ranks is 9.62, while the mean rank of the negative ranks is 7.50. With a difference of 2.12 points, the mean rank of positive ranks is higher than the mean negative ranks.

Table 8. Test Statistics Table of Accuracy

Posttest_Accuracy - Pretest_Accuracy	
Z	-3,601 ^b
Asymp. Sig. (2-tailed)	,000

- a. Wilcoxon Signed Ranks Test
- b. Based on negative ranks.

Similar to the results in speaking fluency, the data analysis results in speaking accuracy also shows Asymp. Sig. (2-tailed) value that is lower than the alpha value ($0.000 < 0.05$) which indicates a significant difference on students' speaking accuracy before and after learning speaking using Duolingo. In other words, Duolingo indeed affect students' speaking accuracy significantly.

Regarding pronunciation aspect as presented in Table 9, Ranks Table of Pronunciation, 2 cases of negative ranks in which the post test is lower than the pretest are found. Additionally, 13 cases of positive ranks shown in the table, which means the 13 students have increase scores from the pretest to the posttest. Further, there are 10 cases of ties in which the posttest scores are similar to the pretest.

Table 9. Ranks Table of Pronunciation

		N	Mean Rank	Sum of Ranks
	Negative Ranks	2 ^a	7,50	15,00
Posttest_Pronunciation - Pretest_Pronunciation	Positive Ranks	13 ^b	8,08	105,00
	Ties	10 ^c		
	Total	25		

- a. Posttest_Accuracy < Pretest_Accuracy
- b. Posttest_Accuracy > Pretest_Accuracy
- c. Posttest_Accuracy = Pretest_Accuracy

Comparing the mean rank of the positive and negative ranks presented in Table 9, it can be seen that the positive ranks has 0.58 points higher mean rank than the negative ranks (8.08 compares to 7.50). In addition, looking at the Asymp. Sig. (2-tailed) value in Table 10, Test Statistics of Pronunciation, it shows a lower value than the alpha value ($0.005 < 0.05$).

Table 10. Test Statistics Table of Pronunciation Scores

Posttest_Pronunciation - Pretest_Pronunciation	
Z	-2,828 ^b
Asymp. Sig. (2-tailed)	,005

- a. Wilcoxon Signed Ranks Test
- b. Based on negative ranks.

This means that there is a significant difference in students' pronunciation before and after learning using Duolingo as technology-based instructional

media. In conclusion, Duolingo gives significant effect on students' English pronunciation.

Table 11. Ranks Table of Vocabulary

		N	Mean Rank	Sum of Ranks
	Negative Ranks	0 ^a	,00	,00
Posttest_Vocabulary -	Positive Ranks	18 ^b	9,50	171,00
Pretest_Vocabulary	Ties	7 ^c		
	Total	25		

a. Posttest_Vocabulary < Pretest_Vocabulary

b. Posttest_Vocabulary > Pretest_Vocabulary

c. Posttest_Vocabulary = Pretest_Vocabulary

Lastly, for the vocabulary aspect, the data analysis results presented in Table 11, Ranks Table of Vocabulary, shows that from 25 data collected, there is no case of negative ranks (posttest < pretest). However, there are 18 cases of positive ranks shown in the data, which means the 18 students experienced increase on their vocabulary after learning English using Duolingo. In addition, there are 7 cases of ties in which the students have similar achievement on vocabulary on the pretest and posttest. Sequentially, the mean ranks of negative and positive ranks presented in Table 11 are 9.50 and 0.00.

Table 12. Test Statistics Table of Vocabulary

	Posttest_Vocabulary - Pretest_Vocabulary
Z	-4,066 ^b
Asymp. Sig. (2-tailed)	,000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The Asymp. Sig (2-tailed) in Table 12, Test Statistics Table of Vocabulary, confirm the significant difference on students' vocabulary before and after learning speaking using Duolingo in which the value is lower than the alpha value (0.000 < 0.05). Thus, it indicates that Duolingo affect the vocabulary aspect of speaking significantly.

From the presentation of the findings in each aspect of speaking, it can be concluded that Duolingo is indeed effective as a technology-based instructional media in learning the four aspects of English speaking – fluency, accuracy, pronunciation, and vocabulary.

Discussion

This study investigates the effectiveness of Duolingo as a technology-based learning media in learning English speaking. Overall, the finding shows the effectiveness of Duolingo in learning English speaking skills. This finding confirms the findings of Herlina *et al.* (2021) and Niah & Pahmi (2019). Both studies determined the effectiveness of the Duolingo application from the total speaking score. However, this present study investigates speaking skills in detail by looking at the effect of Duolingo on each aspect of speaking (fluency, accuracy, pronunciation, vocabulary). Further, the present study's findings show significant differences in all aspects of speaking because all Asymp. Sig. (2-tailed) of the aspects is 0.000, which is lower than the alpha value ($0.000 < 0.05$). It means that the use of Duolingo as a technology-based media in learning English speaking skills is effective not only in the vocabulary aspect but also the other aspects of speaking according to Brown (2001), which the speaking aspects consist of fluency, accuracy, pronunciation, and vocabulary.

Based on the finding of the vocabulary aspect, there was an increase in the posttest score. In other words, the posttest score is higher than the pretest. It can be said that there is a significant difference in students' speaking skills in the vocabulary aspect before and after using the Duolingo treatment for a week. This finding confirms the study of Yuwono (2022) that Duolingo is effective for teaching English vocabulary, and when it was used in teaching speaking, the vocabulary aspect also increased. The results show that there was a significant increase in student scores after being taught English using the Duolingo application. The present study's finding also confirms the findings of Aisyah & Hidayatullah (2020) and Hardiyanti *et al.* (2021). These two studies have the same results that Duolingo has a significant influence in increasing students' vocabulary.

Further, vocabulary is the first aspect of speaking that showed the most significant increase. Vocabulary is the collection of English words that can be arranged as a sentence. Well-chosen vocabulary or phrases in speaking can make a description or story come vivid (Luoma, 2004). The student's vocabulary can increase well since Duolingo provides many new vocabulary words that the students first recognize. Students should express their words using English when they have a lot of vocabulary. Using Duolingo, the students continually add their simple vocabulary while opening and playing the fun learning on Duolingo. The vocabulary shown on Duolingo is so varied, which did not make the students

bored while learning using Duolingo. In addition, the second aspect of speaking that increased better was accuracy. Accuracy includes the right grammatical features of words (Luoma, 2004). When the students play Duolingo, they can know the correct grammar, such as the words that use one of all the English tenses, even though the words are straightforward.

Moreover, the third aspect that the students are better at learning speaking by Duolingo is pronunciation. Pronunciation is how the students pronounce English words using the right sound, pitch volume, stressed words, and intonation (Luoma, 2004). This can increase better because Duolingo serves as a button that the students can click. Then, they can say a word loudly according to the word shown on the Display. Duolingo will automatically record the students' voices and give a response (Tiara *et al.*, 2021).

Ultimately, the fourth aspect of speaking, which the students increased, is fluency. Fluency refers to the length of time students speak when they say an English expression, how they pause, and how they learn to speak like a native who is using a good rate of speech (Luoma, 2004). The fluency of students' speaking can be known by measuring how long the students take to speak, and that can show how fast the students can learn to speak English like a native. Same as the pronunciation, the students can try speaking in the record button shown on the Duolingo. However, Duolingo lacks features for practicing real-time conversations with native speakers or AI chatbots. This limits the development of the necessary skills for spontaneous speech, such as responding quickly, formulating thoughts under pressure, and understanding different dialects and conversational cues. Fluency comes from immersive experiences and consistent practice of speaking in real-life situations. Duolingo, being a standalone app, cannot replace the benefits of interacting with native speakers or living in a target language environment.

Conclusion

This study has shown that using Duolingo as technology-based instructional media has proven to be effective in learning speaking. Further, this study also proves that the use of Duolingo is also effective in learning speaking skills in every aspect, namely fluency, accuracy, pronunciation, and vocabulary. The use of Duolingo helps students learn many things and develops their speaking

fluency, accuracy, pronunciation, and vocabulary. Thus, the implementation is believed to give a positive contribution to students' English speaking.

The limitation of the present study is the duration of the student's use of the Duolingo application. After conducting the pretest, the researchers instructed the students to learn English speaking skills using Duolingo for a week. The researchers assume that a longer exposure on the use of Duolingo will benefit for students in learning English, not only on speaking skills but also other skills of English. In addition, there is a limitation in the research design conducted by the researchers because it only used one group, and no control class was used. Further researchers can implement learning using Duolingo over an extended period (e.g., one month or one semester). A control class is also necessary to compare the results for future studies. This condition may have a different impact on the study's findings.

The pedagogical implication of this study shows that English learning is not enough if it is only done in the classroom, so learners outside the classroom also need to be trained frequently. The researchers suggest teachers use the Duolingo application as an alternative learning tool to enhance students' speaking skills as it is proven to be effective for learning speaking in each aspect (fluency, accuracy, pronunciation, vocabulary). Finally, the results of this study are expected to provide an innovative way for teachers as well as students in English teaching and learning process, especially in speaking skills, so that the teaching and learning process become more flexible, independent, and entertaining.

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