

**THE IMPACT OF DUOLINGO APPLICATION ON STUDENTS'
ENGLISH WRITING SKILLS AT THE TENTH GRADE OF SMK N 2
BANDAR LAMPUNG**

(Undergraduate thesis)

By

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DEPARTMENT OF LANGUAGE AND ARTS EDUCATION
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BANDAR LAMPUNG**

2026

ABSTRACT

THE IMPACT OF DUOLINGO APPLICATION ON STUDENTS' ENGLISH WRITING SKILLS AT THE TENTH GRADE OF SMK N 2 BANDAR LAMPUNG

By

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This study aimed to investigate the effect of using the Duolingo application on students' writing skills. Writing is one of the important skills in learning English; however, many students still faced difficulties in writing, such as limited vocabulary mastery, incorrect grammar usage, difficulties in organizing ideas, and low motivation during writing activities. These problems occurred because students were not accustomed to practicing writing regularly, and the teaching and learning process tended to use less engaging methods and limited learning media. Therefore, the use of interactive media such as Duolingo was considered important to support students' learning. This research employed a quasi-experimental design with a pre-test and post-test. The population of this study was the tenth-grade students of SMKN 2 Bandar Lampung in the academic year 2025/2026, and one class consisting of 34 students was selected using purposive sampling based on the teacher's recommendation. The data were collected through writing tests and assessed using a scoring rubric adapted from Heaton (1991). Inter-rater reliability was applied to ensure scoring consistency, and the data were analyzed using a paired sample t-test. The results showed a significant difference in students' writing skills, with the mean score increasing from 58.4 in the pre-test to 66.3 in the post-test. The paired sample t-test revealed that the significance value was $p < .001$, which was lower than the significance level of 0.05 ($p < .05$), indicating that the difference was statistically significant and that the null hypotheses was rejected. These findings indicate that Duolingo was effective in improving students' writing skills, particularly in vocabulary and language use.

Keywords: *Duolingo, Writing Skills, Descriptive Text, Vocabulary, Language Use.*

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In

The Language and Arts Education Department

Faculty of Teacher Training and Education



**ENGLISH EDUCATION STUDY PROGRAM
DEPARTMENT OF LANGUAGE AND ARTS EDUCATION
FACULTY OF TEACHER TRAINING AND EDUCATION
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BANDAR LAMPUNG**

2026

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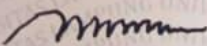
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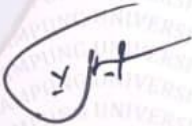
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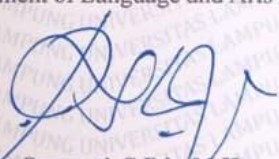
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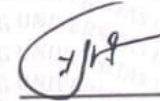
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Menyatakan bahwa skripsi ini adalah karya dari pelaksanaan penelitian saya sendiri. Sepanjang pengetahuan saya, karya ini tidak berisi materi yang ditulis orang lain, kecuali bagian-bagian tertentu yang saya gunakan sebagai acuan. Apabila ternyata terbukti bahwa pernyataan ini tidak benar, sepenuhnya menjadi tanggung jawab saya.

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CURRICULUM VITAE

Hafizah Almahda was born in Metro, Lampung, on August 11, 2004. She is the first child of Edi Sujoko and Nunik Komsianti. She is an undergraduate student of the English Education Study Program at the University of Lampung.

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During her university years, she has been actively involved in academic and organizational activities. She participated in several students organizations, including the Society of English Education Department Students (SEEDS), the University Students Executive Board (BEM-U), the University Student Representative Council (DPM-U), and Islamic Development and Studies Forum (FPPI). through these organizations, she was involved in various activities and committees that supported her personal and professional development.

To fulfill the requirement for her undergraduate degree, she conducted research entitled “*The Impact of Duolingo Application on Students’ English Writing Skills at the Tenth Grade of SMK N 2 Bandar Lampung.*” The study employed a quantitative pre-test and post-test design involving tenth-grade students. The research focused on examining the effectiveness of Duolingo application in improving students’ English writing skills.

Her academic interests include writing skill development, technology-enhanced language learning, and English teaching methodology. She aspires to contribute to development of innovative and student-centered English learning environments.

MOTTO

“Allah does not burden a soul beyond its capacity. Each person will receive the reward for the good they have done and will bear the consequences of the evil they have committed.”

QS. Al-Baqarah: 286

“Sufficient for us is Allah, and He is the best disposer of affairs.”

QS. Ali-Imran: 173

“Tidur selalu tak tenang, pagi selalu menyiksa. Semua akan baik saja, sebab Tuhan telah berjanji setelah sempit, ada kemudahan. Kita, milik-Nya. Semua telah tertulis dan akan Kembali pada-Nya.”

(Raim Laode – Bersenja Gurau)

DEDICATION

In the name of Allah Subhanahu Wa Ta'ala, who always blesses the researcher's life and grants her strength, the researcher would like to wholeheartly dedicate this humble work to her beloved parents, brother, relatives, and and friends for their endless love, prayers, and support.

This work is also dedicated to the outstanding lecturers of the English Department, University of Lampung, for their valuable knowledge and guidance.

The researcher also dedicates this work to her beloved almamater, the University of Lampung, to all hardworking teachers who continue to inspire students, and finally to herself for the perseverance and effort in completing this research.

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This thesis is submitted as one of the requirements to obtain the Bachelor’s Degree in Education at the Faculty of Teacher Training and Education, University of Lampung.

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Finally, the researcher realizes that this thesis is still far from perfect. Therefore, constructive criticism and suggestions are highly appreciated for the improvement of this research. Hopefully, this thesis can give positive contributions to the development of English education and be useful for readers and future researchers.

Bandar Lampung, 11 Mei 2026

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I. INTRODUCTION

This chapter presented the background of the research, research questions, the research objectives, uses of the research, scope of the research, and definitions of terms.

1.1. Research Background

Currently, learning English is very important to achieve competence that is reflected in student's ability to communicate effectively both orally and written form. The development of writing skills is very important in language acquisition because writing helps students organize and express their thoughts clearly. According to Harmer (2004), writing skills are essential for learners to achieve communicative competence, a primary goal of language education.

The importance of developing students writing skills has been well established in literature. Writing is one of the most important language skills and plays a significant role in both formal and informal communication (Rakhmasari, 2021). However, many students still face difficulties in developing their writing skills, especially in a foreign language context. These difficulties include limited vocabulary, lack of grammar mastery, and problems in organizing ideas. This challenge has prompted researchers and educators to explore a variety of approaches and techniques to improve students' writing skills.

According to Sakkir (2020), students have many ideas in their minds, but they often feel worried to start writing and have difficulty developing those ideas, partly due to limitations in grammar and vocabulary. This problem is closely associated with students' lack of grammatical and vocabulary mastery, making it difficult for them to initiate and elaborate their ideas in writing. Based on a discussion with the English teacher, several problems were found in the classroom. Students' writing ability was still low, as shown by their limited

vocabulary mastery, incorrect grammar usage, and difficulties in developing ideas in written form. In addition, students tended to feel bored and less motivated during the learning process because the teacher mainly used printed books as the teaching media, while interactive learning media were still rarely used. Moreover, the Duolingo application was still unfamiliar to the students. Therefore, an interesting and interactive learning medium was needed to help students improve their writing skills and increase their learning motivation.

Duolingo is a language learning android-based program that will guide users step by step. In this application, there are many variations of questions to chose form. Visual materials such as pictures make it easier for students to remember English vocabulary and audio makes it easier for students to produce or improve pronunciation even better (Puspita, 2021).

Moreover, Shortt et al., (2021) the gamified language learning program of Duolingo has been used by more than 300 million people around the world. Duolingo is a language learning android-based program that will guide users step by step. In this application, there are many variations of questions to chose form. Duolingo application is very useful for language learning activities because it is equipped materials. This application is highly recommended for students can easily gras new vocabulary and was made to be used easily anytime and anywhere. It gives new experiences for the learners where they can play and learn at the same time.

1.2. Research Question

Based on the background, the researcher formulates a research questions:

“Is there any significant difference in students’ English writing skills after being taught using Duolingo?”

1.3. Objectives of the Research

Based on the research question above, the purpose of this study is to find out if there is a significant difference in students' writing skills after being taught using Duolingo.

1.4. Uses of the Research

1. Theoretically: This study can serve as a reference for teachers to make better use of existing technology as a media to be used in teaching and learning activities that can increase student writing skills and this study served a reference for other researcher.
2. Practically: The findings provided teachers with insights to effectively integrate technology into their teaching practices, and this study was useful to support previous theories about writing.

1.5. Scope of the Research

The focus of this research is to find out whether using Duolingo as learning media can improve students' writing skills. This research was in one class at the tenth grade. The researcher choose SMK N 2 Bandar Lampung. The school was selected because it met the requirements of this study, particularly in terms of technological facilities such as students' access to mobile phones to support learning through Duolingo.

1.6. Definition of Terms

There are some terms used by researcher to give a basic understanding of the concept, the researcher give the definitions as follows:

1. Writing skill in this study is defined as the ability to communicate effectively in written form, reflecting their capacity to organize and express their thoughts

and ideas clearly.

2. Duo lingo is a free language learning application and website that uses a gamified approach to make the learning process more enjoyable and accessible.

This chapter provided explanations related to the research, which consisted of the background of the study, research objectives, scope of the research, and definition of terms.

II. LITERATURE REVIEW

This chapter discusses several points related to the stories use in this research. Those are definition of writing, aspects of writing, teaching writing, descriptive text, definition of media, concept of Duolingo application, advantages and disadvantages of Duolingo, procedure of learning writing using Duolingo, previous study, theoretical assumption, and hypotheses.

2.1. Writing

Writing is a process of communication that involves conveying messages or information to others in written form, using language as the medium. In addition, Marwoto (2014), explained that writing is expressing ideas or thoughts in the form of composition freely.

From the above, it can be concluded that writing is an indirect communication activity, carried out to convey certain intentions in writing.

2.1.1. Definition of Writing

Writing skills are an essential component of language learning, and students need to develop their ability to write along with reading and engaging with the language. According to Berninger et al. (2002), writing is considered an active text-making process that combines higher-level self-regulated thinking processes, such as planning, sequencing, and expressing content, with lower-level transcription skills, such as handwriting, punctuation, and spelling.

As stated by Ismayanti (2020), the students must organize their ideas into clear paragraphs and ensure their writing is readable. This challenge is even greater for

students who are not native English speakers, because limitations in mastery of vocabulary and grammar can hinder accurate message delivery. Writing requires complex thinking, making it more difficult than other language skills.

Based on the explanation above, writing skills are very important in language learning, as students are able to convey information and express ideas in a structured way. Writing involves high-level cognitive processes, such as planning and sequencing, and lower-level skills, such as penmanship and punctuation. Writing is often considered a difficult skill to master, requiring extensive knowledge, experience, and vocabulary.

2.1.2. Aspects of Writing

In general, producing good writing requires attention to several important aspects. Heaton (1991), identified five key components that should be considered in writing a composition.

1. Content

Content consists of the main idea or a set of interconnected statements organized into a coherent whole to discuss a topic. Content serves to convey information or ideas, rather than to serve as a connector, a repetition, or an emphasis.

2. Organization

Organization refers to the proper or logical arrangement of content—the process of structuring separate facts and ideas into a coherent, sequential whole. In the early stages, the writer is still in the process of establishing structure, trying to identify patterns, and aligning the details of the topic with the evolving central idea.

3. Vocabulary

Vocabulary refers to the selection of words that are appropriate for the content of a text. It is the writer's effort to convey the main idea clearly and simply. Therefore, the vocabulary chosen is that which conveys meaning accurately, rather than causing misunderstandings.

4. Language Use

Language use involves the proper application of grammatical patterns and syntactic structures to separate, connect, and group ideas into words, phrases, clauses, and sentences, thereby ensuring that the structure of a paragraph is clear.

5. Mechanics

Mechanics refers to the use of graphic conventions, such as arranging letters, words, sentences, and paragraphs, by applying an understanding of language structure and other related elements.

Based on the explanation above, it can be concluded that effective writing involves five main aspects proposed by Heaton (1991), namely content, organization, vocabulary, language use, and mechanics.

2.1.3. Teaching Writing

Teaching is the process of guiding and facilitating learning and enabling learners to develop their knowledge and skills. According to Graham et al. (2020), suggest that teaching writing includes a range of activities such as developing sentence construction, compositional strategies, and the ability to use language effectively. This process supports students not only in organizing their ideas but also in enhancing skills that require limited conscious attention, enabling them to focus more on expression than on mechanical writing details.

According to Harmer (2004), writing activities are typically taught in five stages: planning/pre-writing, writing, revising, editing, and publishing.

1. Planning/Pre-writing

The planning stage is the first step in the writing process. In this stage, students prepare their ideas before writing. They choose a topic, think about what they want to write, and organize their ideas. This stage helps students to have a clear direction so they do not feel confused when they start writing.

2. Drafting/Writing

In the drafting stage, students begin to write their first version of the text. They try to develop their ideas into sentences and paragraphs. At this stage, students do not need to focus too much on grammar or correctness. The main goal is to express their ideas freely and produce a complete draft.

3. Revising

In the revising and editing stage, students improve their writing. They check their ideas, organization, and clarity of the text. Students may add, remove, or change some parts of their writing. They also correct grammar, vocabulary, and punctuation. This stage helps students make their writing better and easier to understand.

4. Publishing

In the final version stage, students produce the final form of their writing. After revising and editing, they rewrite their text more clearly and neatly. The writing is ready to be submitted or shared with others. This stage shows the final result of the students' writing process.

Teaching writing involves guiding students through multiple stages, from planning and drafting, writing to revising, editing, and finally publishing their work. This process oriented approach helps students develop not only their ideas but also their linguistic accuracy and confidence in writing, turning writing into a structured and manageable task.

2.2. The Concept of Descriptive Text

According to Daulay et al. (2023), a descriptive text is a type of writing that defines, explains, and describes an object or subject in detail. The main purpose of this type of text is to provide the reader with a clear and precise description of a particular object, person, or place. In writing a descriptive text, the writer focuses on describing the physical characteristics, such as appearance, shape, and condition, so that the reader can easily imagine the object being described.

Therefore, descriptive text plays an important role in helping readers understand and visualize something based on the writer's explanation.

In addition, Ariyana et al. (2020), stated that descriptive text is a composition that aims to describe an object based on facts, described in detail and describe on a real situation in detail so that when the readers reads, it is as if he feels and sees an object that is being described.

2.3. Definition of Media

The term “medium” is derived from the Latin *medium*, which means an intermediary or messenger. In Arabic, it also refers to a means of conveying messages from a sender to a receiver. In the context of learning, media functions as a bridge between the source and the recipient of information. Helping to stimulate students’ thoughts, emotions, attention, and motivation to participate in the learning process. Media refers to tools that can be seen, heard, read, and manipulated, and that can be effectively utilized in teaching and learning activities to enhance the success of educational programs (Magdalena, 2021).

According to Putri et al., (2022), the media is a fundamental tool from an educational perspective, where its role is crucial in determining success in the teaching and learning process. This is because its existence can contribute its own dynamic to the presence of students.

2.4. Duolingo Application

According to Garcia (2013), Duolingo is a free online language learning service to assists users in learning languages by utilizing their learning activities via the Web and apps. Duolingo contains a variety of up-to-date language-learning strategies. This can help pupils understand, be interested in, and enjoy studying since it creates a sense of learning while they are learning. Duolingo offers a variety of languages from which language learners can pick, including English, Arabic, Spanish, French, Dutch, and others.

Duolingo is one of the most popular language-learning applications. It is an application that can be accessed using a computer or mobile phone for free. Munday (2015) stated that Duolingo aims to teach fun languages, even though this application presents a combined activity between several skills in the form of a game. It connects lessons with a game that can build interest in learning the language. Duolingo combines elements of audio, visual, and questions surrounding vocabulary and grammar enjoyably. Thus, it can give the influence to improve English language skills for its users. Learning media can be used to engage students, encourage creativity and collaboration, and increase their confidence in expressing ideas during classroom activities.

2.5. Teaching Writing Through Duolingo

Abaunza et al. (2019), found that Duolingo use improved academic performance in English. Duolingo implements a scaffolding system that begins with simple word exercises using a word bank and progresses to more complex independent writing, allowing for gradual and structured learning.

Duolingo's effectiveness in teaching writing is also supported by multimodal approach that simultaneously integrates listening, reading, writing, and speaking skills. The platform uses an algorithm that creates practice sessions at the appropriate level of difficulty, encouraging students to develop new skills while maintaining engagement. Duolingo capitalizes on this principle by giving students ample time to process and structure their writing, thus facilitating more effective writing learning.

2.6. Procedures for Teaching Writing Using Duolingo Application

The procedures for teaching writing using the Duolingo application in this study consisted of four stages: planning/pre-writing, drafting/writing, revising, and publishing/editing. In each stage, students used Duolingo to improve their vocabulary mastery, grammar understanding, and writing organization through interactive exercises and activities. Through these procedures, students were expected to become more motivated and improve their writing skills effectively.

1. Planning/Pre-Writing

In the planning phase, students use Duolingo app to improve their vocabulary and understand the language rules related to the writing topic. After completing the vocabulary and grammar exercises in Duolingo, they are asked to create an outline or mind map as a guide for designing writing ideas and structures. This method helps students prepare materials and organize their ideas to make the writing process more precise and efficient.

2. Drafting/Writing

- a. Students write a first draft based on the outline they created using Duolingo vocabulary and grammar.
- b. At this stage, focus on developing the content and conveying ideas, without paying too much attention to grammatical errors.
- c. The teacher encourages students to write freely and creatively.

3. Revising

After completing the initial draft, students go through a revision process. They review their writing and compare it with the material learned on Duolingo to ensure vocabulary and grammar are correct. They also participate in peer review sessions or group discussions to provide feedback on the content, clarity, and viability of the text. They then improve the content and structure of the text based on the feedback receive to make it better and easier to understand.

4. Publishing

During the editing process, students work to improve the technical aspects of their writing, such as language usage, phrasing, punctuation, and style. Instructors provide editing checklists that facilitate self-assessment of errors and encourage them to use Duolingo's grammar exercises as a guide to correct them. This process ensures that the text is well-organized, free of technical errors, and ready for publication.

2.7. Advantages and Disadvantages of Duolingo

The Advantages

Duolingo is a highly popular and effective digital language learning platform. Its success is driven by its core strengths: easy accessibility and an intuitive interface suitable for most learners. Crucially, the material is structured step-by-step to efficiently build fundamental vocabulary and grammar skills. The advantages of Duolingo application as follows:

1. Duolingo is easily accessible to anyone with a simple and intuitive interface, making it suitable for beginners and intermediate language learners.
2. The material is systematically organized with effective introduction to basic vocabulary and grammar, helping users follow the learning process step-by-step.
3. The use of points, streaks, leaderboards, and daily challenges makes learning fun and encourages users to practice consistently.
4. Duolingo provides interactive exercises for reading, writing, listening, and speaking with audio and speech recognition technology.

So, Duolingo excels by motivating users through gamified features (points, streaks, etc.) to ensure consistent practice. Combined with interactive exercises for all four language skills, it proves to be a dynamic and engaging tool for acquiring language basics.

The Disadvantages

Despite being popular, Duolingo faces significant limitations, especially for serious language learners. Key drawbacks include restricted speaking practice and shallow grammar explanations, which fail to provide the in-depth knowledge required for advanced usage. The disadvantages of Duolingo application as follows:

1. Speaking exercises are still limited and do not fully prepare users for natural and fluent language conversations.
2. Grammar materials are presented briefly without in-depth discussion, making it less suitable for advanced learners who want to understand language structure in detail.

3. Repetitive exercises and minimal cultural context make learning feel monotonous and less enriching in terms of language experience.

4. Free users face ads and feature restrictions such as limited “lives,” which can disrupt smooth learning.

Ultimately, Duolingo suffers from a monotonous user experience due to repetitive exercises and minimal cultural context. Furthermore, free users are frequently interrupted by ads and feature limits, potentially hindering the consistent and seamless learning process the platform promises.

2.8. Assessing Writing

Assessing writing is the process of systematically evaluating students’ written production in order to measure their performance and provide meaningful feedback. The aim of assessment is not only to determine the level of students’ writing ability but also to inform teaching practices and guide learners toward improvement. According to Heaton (1991), assessing writing requires attention to various components, including content, organization, vocabulary, language use, and mechanics, as these aspects collectively reflect a student’s overall proficiency.

In addition, how to assess writing can be carried out through several techniques depending on the instructional goals. Teachers may use scoring rubrics that outline clear criteria, ensuring transparency and consistency in evaluation. Portfolios allow assessment of students’ progress over time by collecting multiple pieces of work, while timed writing tasks help measure fluency and organization under exam conditions. Peer and self-assessment can also be effective tools, as they engage students actively in the evaluation process and promote critical thinking about their own writing. Feedback, whether written or oral, plays a central role in assessment by guiding students on what needs to be improved and how they can refine their expression.

Overall, assessing writing is not merely about grading but also about supporting learners in their development. Through careful selection of methods and clear criteria, teachers can provide a fair and comprehensive evaluation of students’

abilities. Effective assessment helps learners recognize their progress, understand areas requiring more attention, and develop confidence in expressing ideas through writing. In this sense, writing assessment serves as both a measurement tool and a learning process that contributes significantly to students' long-term writing competence.

2.9. Related Studies

In conducting this research, the researcher reviewed several previous studies that investigated similar topics. The first study discussed about writing skills are a fundamental and complex competency in mastering English as a Foreign Language, and are considered essential for achieving communication goals, both verbally and in writing. This skill is very important because it helps students organize and express their thoughts clearly and effectively, which is the main goal of language education. However, reality shows that many high school students in Indonesia still face fundamental difficulties in writing, which are often characterized by limited vocabulary, repeated grammatical errors, and a lack of motivation, exacerbated by a reluctance to put ideas into writing for fear of making mistakes. The integration of technology, particularly through self-learning applications such as Duolingo, is relevant to overcoming these issues of motivation and accuracy

Duolingo, as a highly popular gamification platform, has been the subject of numerous empirical studies at various levels of education. Consistently, research shows that this application has a positive impact on overall English language learning outcomes. Specifically in the context of writing, Duolingo has proven to be highly effective in improving low-level linguistic accuracy, which is a major obstacle for students.

For example, a study by Ilsanti (2025) showed a significant improvement in grammatical competence for writing reconstruction texts in vocational high schools, a finding that is in line with the improvement in grammar skills among students at SMK N 1 Sukasada (Budiani et al., 2020). Syahputra (2019) also reported that Duolingo gamification effectively reduced students' grammatical

errors in writing report texts in high school. Even at the university level, Osmunda et al., (2024) observed a significant decrease in various types of discrete errors, such as prepositions, agreement, and verbs in writing job application letters.

The positive impact of Duolingo also extends to improvements in overall writing scores and specific text genres at the high school level. Yuniarsih (2021) and Mayasari (2025) statistically confirm the positive and significant influence of Duolingo on the general writing skills of 11th grade high school students. In Grade X students at Purworejo 5 Public High School, (Adhitya et al., 2025) reported positive improvements in descriptive text writing, particularly in sentence structure comprehension and vocabulary enrichment. Similar findings highlighting the effectiveness of Duolingo were also reported by Kazu (2024), who found improvements in all four skills.

Duolingo's success in improving linguistic accuracy and basic writing skills, especially among middle school students, is reinforced by clear quantitative findings:

A quasi-experimental study involving on eighth-grade junior high school students in Pati by Damayanti et al. (2023), showed that using Duolingo app for teaching procedural texts was highly effective. The average post-test score for the experimental group was 84.78 compared to 76.66 for the control group, with t- test results (indicating significant effectiveness).

Therefore, although Duolingo's success in improving linguistic accuracy and basic writing skills, such as grammar and vocabulary has been extensively confirmed in high school/vocational school students, there is a crucial research gap: the need to test whether the improvement in low-level skills triggered by Duolingo can be transferred to the development of more complex discourse competencies. This study specifically aims to measure the impact of Duolingo application on higher-level writing skills, namely the ability of 10th grade students to achieve Cohesion and Coherence and Argumentation Quality, which, according to a review of academic testing literature, are the most important predictors of success in mature academic writing.

2.10. Theoretical Assumption

Writing skills are one of the main elements in language learning that includes vocabulary guidance, grammar, and the ability to organize systematic ideas. In English learning in Indonesia, the process of forming writing skills tends to face obstacles in the form of weak motivation and the occurrence of interesting learning media. Duolingo's application as a technology-based learning resource offers a solution by offering structured interactive exercises, trigger gamification, and direct feedback that can facilitate students to improve vocabulary and grammar mastery progressively. The research section in Indonesia shows that the use of Duolingo can significantly improve students' writing skills, especially organizing ideas, using appropriate vocabulary, and developing grammar.

In addition, Duolingo supports a flexible and independent learning process, allowing students to practice writing outside of class hours with easy progress monitoring by teachers. This approach is in line with the theory of technology-based learning which emphasizes the importance of active involvement and student motivation in the learning process. Thus, the use of Duolingo application not only increases the aspect of technical writing but also enhances students' confidence and interest in learning the English language.

This strengthens the assumption that the use of digital media such as Duolingo in writing learning can be an effective alternative to improve the quality of language learning at Indonesian senior high schools.

2.11. Hypotheses

According to Setiyadi (2018), hypotheses is known as a speculation concerning expect relationships among phenomena. Furthermore, the hypotheses was a temporary answer to the research problem. The hypotheses of this study were explained:

H1: There is a significant difference in students' writing skill after being taught using Duolingo.

Based on the previous studies and related theories, the use of Duolingo may influence students' writing skills.

III. METHOD

This chapter discussed about the research design, variables and data, data sources, instruments, data collection, data analysis, data treatment, and hypotheses testing.

3.1. Research Design

This study used a quantitative research design with a pre-test and post-test design. This approach was chosen to measure whether the use of Duolingo application in writing instruction had a significant effect on the writing skills of tenth grade students. The design allowed the researcher to collect data by comparing the results before and after the treatment, which was teaching writing using Duolingo.

T1 X1 T2

T1 (Pre-Test Writing) : That is given before the implementation of Duolingo

T2 (Post-Test Writing) : That is given after the implementation of Duolingo

X1 (Method/Treatment) : Teaching writing descriptive test using Duolingo

Before the treatment was conducted, students were given a pretest to measure their initial writing ability. This pretest served as a baseline to identify students' writing skills prior to the use of Duolingo in the learning process. After the pretest, students' received treatment through Duolingo-assisted writing instruction. The application was used as a digital learning medium to enhance students vocabulary mastery, grammatical understanding, and writing structure development.

During the treatment, the teacher guided students in utilizing Duolingo features systematically. After the treatment was completed, students were given a posttest to measure changes in their writing ability. The results of the posttest were then compared with the pretest results to determine whether there was a significant improvement in students' writing skills after the use of Duolingo. Thus, the comparison between pretest and posttest scores became the basis for answering the research question.

This design was structured to provide a clear answer to the research question, namely whether there was a significant improvement in students' writing skills after using Duolingo. This quantitative approach with a pretest-posttest was considered adequate to obtain objective and measurable results, so that the research findings provide relevant conclusions regarding the effectiveness of using Duolingo in writing learning.

3.1.1. Research Variable

Most research, there are two variables: the independent variable and the dependent variable. In this research, both variables were categorized as dependent variables, namely the pre-test (T1) and post-test (T2) scores, which were used to measure students' writing skills before and after the implementation of the treatment.. According to Setiyadi (2018), variables refer to individual qualities, their behavior, or their surrounding circumstances, which can differ from one person to another

The variables used in this study are explained below:

1. Pre-test (T1) was used as the first dependent variable to measure students' writing skills before the implementation of the treatment.
2. Post-test (T2) was used as the second dependent variable to measure students' writing skills after the implementation of the treatment.

In this study, Duolingo functioned as the treatment, as it provided interactive exercises, vocabulary practice, grammar activities, and writing prompts to support students' writing skills. Students' writing skills was measured through their scores on pre-test and post-test writing tasks.

The data used in this study were primary quantitative data collected directly from the students' test results. These scores reflected students' writing skills before and after the use of Duolingo. The data were classified as interval data, as they allowed the calculation of differences between scores, making them suitable for parametric analysis using a paired sample t-test. Students' writing skills included aspects such as content, organization, vocabulary, language use, and mechanics, which became the main focus to determine whether there was a significant improvement after the treatment.

3.2. Population and Sample

The population of this study consisted of all tenth-grade students at SMKN 2 Bandar Lampung in the academic year 2025/2026. There were twenty classes of tenth-grade students in this school. The sample of this study was one class consisting of 34 students. The sample was selected using a purposive sampling technique based on the teacher's recommendation. The selected class was considered suitable for this research because the students still faced difficulties in writing skills, particularly in vocabulary mastery, grammar usage, and organizing ideas in written form. In addition, students' motivation in learning writing was still relatively low. Therefore, the class met the criteria needed to investigate the effect of Duolingo on students' writing ability. Purposive sampling was used by selecting a specific class based on certain considerations relevant to the objectives of the study. All students in the selected class were included as the sample.

3.3. Research Instruments

The instrument used in this study is pre-test and post-test specifically designed to measure students' writing ability before and after the test. The writing test covered several important aspects of writing skills, such as content, organization, vocabulary, language use, and mechanics. This instrument was designed to provide an objective assessment of students' writing skills.

3.3.1. *Validity*

Setiyadi (2018), states that content validity refers to the extent to which a test represents the material being measured. To ensure this validity, the researcher developed the test based on the learning objectives in the syllabus for tenth grade students. In addition, the test materials were discussed with the English teacher at SMK N 2 Bandar Lampung to ensure their appropriateness.

Content Validity:

Setiyadi (2018) explains that content validity refers to how well the indicators of an assessment instrument represent the material being measured. It focuses on whether the test adequately reflects the content that should be assessed. To ensure strong content validity, the researcher designed the test materials based on the learning objectives outlined in the syllabus for tenth-grade senior high school students. Additionally, the test instructions and materials were consulted with the English teacher at SMK N 2 Bandar Lampung to confirm their suitability.

Construct Validity:

To ensure construct validity, the researcher developed the test based on the theoretical framework of writing skills. The assessment focused on five aspects of descriptive writing

purposed by Heaton (1991): content, organization, vocabulary, language use, and mechanics. In this study, students were required to produce a descriptive text as a measure of their writing ability. Their work was then evaluated using a writing scoring rubric by Heaton.

3.3.2. Reliability

To ensure the reliability of students' writing scores and minimize subjectivity, inter-rater reliability was applied in this study. Inter-rater reliability refers to the consistency of scoring between two different raters in assessing students' writing skills. The writing tests were scored by two raters, namely the researcher and the English teacher of the tenth grade at SMKN 2 Bandar Lampung. Both raters used the same scoring rubric adapted from Heaton (1991) in assessing the students' pre-test and post-test writing results.

Based on Setiyadi (2018), the reliability level of a test can be interpreted using the following criteria:

Nilai r	Interpretasi
0.000 – 0.200	Very low reliability
0.200 – 0.400	Low reliability
0.400 – 0.600	Medium reliability
0.600 – 0.800	High reliability
0.800 – 1.00	Very high reliability

Table 3.1. Reliability

Based on the standard of reliability above, it can be concluded that the writing tests were considered reliable if the result of the tests reached the range of 0.6-0.8 (high reliability). The reliability data were obtained from the correlation between the scores given by the two raters and were calculated using SPSS version 27.0.

3.2. Data Collection

The data collection process in this study involved several stages to make sure the

data obtained were accurate and representative. The first stage was the pretest, in which students were asked to write without the help of Duolingo application. This pretest aimed to obtain an initial score that reflected students' writing ability before being given treatment using Duolingo. After the pre-test, the students participated in a series of writing learning sessions that used Duolingo as the main digital tool. In these sessions, Duolingo was used as an interactive platform to help students develop vocabulary, improve their grammar understanding, and enhance their writing structure. The learning sessions aimed to train students to utilize Duolingo's features effectively in improving their writing skills.

During the treatment, the teacher provided guidance and instructions on how to navigate Duolingo's writing exercises and apply the learned concepts in their own writing tasks. Students were instructed to complete various Duolingo activities including vocabulary building exercises, grammar practice, and guided writing prompts. This approach was expected to help students develop more structured and sophisticated writing skills. After the treatment session were completed, students took the post-test, where they were asked to demonstrate their improved writing abilities. The posttest provided data that were compared with the pretest results determine whether there was any significant improvement in their writing skills. The data obtained from the pretest and posttest formed the basis of the analysis. Data collection was conducted systematically to ensure the validity and reliability of the research results.

3.3. Analysis Data

After collecting and assessing the students' writing using a rubric Heaton (1991), the data were analyzed using SPSS. Descriptive statistics were used to describe students' writing skills before and after the treatment. A normality test was conducted, followed by a paired sample t-test to determine whether there was a significant improvement. The decision was based on the significance value ($p < 0.05$).

3.3.1. Data Analysis

After the students' writing samples were collected and assessed using a writing rubric by Heaton (1991), covering aspects of content, organization, vocabulary, language use, and mechanics, the next step was to conduct descriptive statistical analysis to provide an overview of the students' writing abilities.

This descriptive analysis included the calculation of the mean, standard deviation, and gain score, each of which illustrated the central tendency, score distribution, and the level of improvement in students' writing ability after the instructional intervention.

The data obtained from the pre-test and post-test writing scores were analyzed quantitatively using the SPSS program through several stages. First, descriptive statistics such as mean, standard deviation, minimum, and maximum were calculated to provide an overview of students' initial ability and their achievement after treatment using Duolingo application. Next, a normality test using the Kolmogorov-Smirnov or Shapiro-Wilk method was conducted to check whether the data distribution met the assumption for parametric testing.

After ensuring data normality, inferential tests are carried out. A paired sample t-test was used to compare pre-test and post-test results within the experimental class, while an independent sample t-test was applied to compare the pretest and posttest results after the treatment. The decision rule is based on the significance value: if sig. < 0.05, the null hypotheses was rejected, and the alternative hypotheses was accepted. This process determined whether Duolingo application has a statistically significant effect on improving students' writing skills.

This statistical analysis was important for identifying patterns in students' writing development quantitatively and served as a basis for further statistical analysis such as t-test or mean difference tests.

3.3.2. Data Treatment

Data treatment was a vital phase in quantitative research aimed at processing raw data into a form that was ready for analysis and capable of producing valid results. In this study, the data treatment process ensured that the students' scores on descriptive writing tests were complete, accurate, and meet the requirements for statistical analysis.

The normality test was used to determine whether the data in the experimental class has the normal distributed or not. In this research, statistical computation was conducted using SPSS (Statistical Package for Social Science). The criteria of acceptance or rejection of normality test are as follows:

H0 is accepted if $\text{sig} > \alpha = 0.05$

H1 is accepted if $\text{sig} < \alpha = 0.05$

The hypotheses for the normality test are:

H0 : the data are normally distributed

H1 : the data are not normally distributed

After the data were computed using SPSS, the researcher analyzed the results to determine whether the data were normally distributed or not. (Setiyadi, 2018).

3.6. Hypotheses Testing

The researcher use this formula for testing the hypotheses of this research:

$$H1 = \text{sig.} < 0.05$$

H0 There is no significant difference in students' English writing skills after being taught using Duolingo.

H1 There is a significant difference in students' English writing skills after being taught using Duolingo.

The Result of Paired Sample Test for Writing SkillsThe hypotheses was accepted or rejected based on the significance value (Sig. 2- tailed). If the significance value was less than 0.05 ($p < 0.05$), the null hypotheses was rejected and the alternative hypotheses was accepted. However, if the significance value was greater than 0.05 ($p > 0.05$), the null hypotheses was accepted.

This chapter explained the research design, variables, data sources, instruments, procedures of data collection, techniques of data analysis, data treatment, and hypotheses testing.

V. CONCLUSION AND SUGGESTION

5.1. Conclusion

Based on the findings and discussions of this research, the researcher concluded that the use of Duolingo application has a significant positive effect on the writing ability of tenth-grade students. The results of the pre-test and post-test analysis show a clear improvement in students' writing skills after the implementation of Duolingo as a learning medium. The mean score increased from 58.38 in the pre-test to 66.32 in the post-test, indicating substantial progress in students' ability to develop content, use appropriate vocabulary, apply correct grammatical structures, and organize ideas coherently in descriptive writing, the most significant improvements were found in vocabulary and language use.

The statistical analysis further supports this conclusion. The paired sample t-test revealed a significance value (Sig. 2-tailed) of 0.000, which is lower than the predetermined significance level of 0.05. This result confirms that the improvement in students' writing scores was statistically significant, leading to the rejection of the null hypotheses and the acceptance of the alternative hypotheses. Therefore, it can be stated that teaching writing through Duolingo application effectively enhanced students' English writing skills.

In conclusion, Duolingo can be considered an effective instructional medium for improving writing ability among tenth-grade senior high school students. Its interactive and structured learning activities provide meaningful practice that supports students' writing development. This study suggests that integrating digital language-learning applications such

as Duolingo into writing instruction can be a valuable alternative to support students' achievement in English writing at the senior high school level.

5.2. Suggestion

Based on the findings of this research, the researcher provides several suggestions for English teachers and future researchers:

1. Suggestions for English Teachers

English teachers are encouraged to integrate Duolingo application into writing instruction, particularly for tenth-grade students, as it has been proven to significantly improve students' writing ability. The significant increase in students' writing scores after the implementation of Duolingo indicates that the application can effectively support students in developing vocabulary mastery, grammatical accuracy, sentence construction, and overall text organization.

Teachers are advised to use Duolingo as a supplementary learning medium rather than as the sole instructional tool. By combining Duolingo with classroom-based writing activities such as guided writing, peer review, and teacher feedback, students can achieve better learning outcomes. In addition, teachers should provide clear guidance on how students can apply the vocabulary and grammar learned from Duolingo into their own writing tasks to maximize the effectiveness of the application.

Furthermore, teachers are suggested to implement the use of Duolingo over a longer instructional period to allow students to experience more consistent practice and deeper writing development. Continuous monitoring and feedback from teachers are also important to ensure that students use the application purposefully and remain focused on improving their writing ability.

2. Suggestions for Future Researcher

Future researchers are suggested to design pre-test and post-test materials that are more relevant to the students' department or field of study. This is important to ensure that the writing tasks are meaningful and appropriate to the students' academic context, which may lead to more accurate results in measuring their writing skills.

Furthermore, future researcher may conduct studies with a longer duration of treatment to examine the long-term effects of using Duolingo application on students' writing development. Since this study was conducted within a limited number of meetings, extended research periods may provide more comprehensive insights into students' progress across different stages of writing proficiency.

In addition, future studies may involve a larger sample size or include a control group to strengthen the generalizability of the findings. Researchers are also encouraged to explore the impact of Duolingo on specific aspects of writing skills, such as content development, organization, or mechanics, to gain a more detailed understanding of its effectiveness.

Finally, future researchers may consider combining quantitative data with qualitative methods, such as classroom observations or students' reflective writings, to obtain deeper insights into how Duolingo supports students' writing processes. This mixed-method approach could provide richer evidence regarding the role of digital applications in enhancing English writing instruction.

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